ESSENTIAL SERVICES COMMISSION

Minimum electricity feed-in tariff to apply from 1 July 2021

Draft decision

17 November 2020

An appropriate citation for this paper is:

Essential Services Commission 2020, Minimum electricity feed-in tariff to apply from 1 July 2021: Draft decision, 17 November

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Contents

Summary

- The draft minimum single feed-in tariff rate is 7.1 cents per kWh. This is 30 per cent lower than the current feed-in tariff rate.
- The draft minimum time-varying feed-in tariff rates range from 6.5 to 11.7 cents per kWh depending on the time block. They are also lower than the current time-varying feed-in tariff rates.
- The minimum feed-in tariff rates are lower than last year due to a forecast reduction in wholesale electricity prices for 2021–22.
- Retailers can offer the single feed-in tariff rate **and/or** time-varying feed-in tariff rates.
- Retailers may offer feed-in tariff rates higher than the minimum if they prefer.

A feed-in tariff is the rate at which customers are credited when they export excess electricity generated from their small-scale solar, wind, hydro or biomass generation facilities.[1] This rate is in cents per kilowatt hour (cents per kWh).

Victorian electricity retailers with 5,000 or more customers are required to offer no less than the regulated minimum feed-in tariff rates to eligible customers.[2] You are an eligible customer if you have a small renewable energy generation facility with an installed or nameplate generating capacity of less than 100 kilowatts and it is connected to a distribution system.[3]

If an electricity retailer has less than 5,000 customers, the retailer is not required to offer eligible customers the regulated minimum feed-in tariff rates. But they can still offer a feed-in tariff rate if they prefer.

[1] Electricity Industry Act 2000, s.40F(1). An important exception is that a 'small renewable energy generation facility' does not include a generating facility that is under the premium solar feed-in tariff scheme (Electricity Industry Act 2000 section 40F(1)). Further, the Governor in Council, by order published in the Government Gazette, can specify a facility or class of facility that generates electricity in any way as a small renewable energy generation facility (Electricity Industry Act 2000 section 40F(2)).

[2] Electricity Industry Act 2000, s.40F(1). The relevant electricity retailer is a person that holds a licence to sell electricity and sells to more than 5,000 customers.

[3] Electricity Industry Act 2000, s.40F(1).

For simplicity, this draft decision refers to eligible customers as solar customers, given solar accounts for more than 99.9 per cent of small renewable energy generation facilities in Victoria.[4]

Setting the minimum feed-in tariff rates

Under the Electricity Industry Act 2000, we determine one or more rates electricity retailers must pay their solar customers for the electricity they export to the grid. We refer to these rates as the minimum feed-in tariff rates.

In setting the minimum feed-in tariff rates, we are required to consider several factors[5]:

- Avoided wholesale electricity prices – refers to the prices retailers avoid paying on wholesale electricity purchases when a small scale renewable generator exports electricity to the grid.
- Avoided transmission and distribution losses – line losses occur when electricity is transported through transmission and distribution networks. This is minimised when a small renewable generator exports to the grid.
- Avoided social cost of carbon and human health costs – carbon emissions and associated impacts on human health are reduced when energy is sourced from small renewable generators. The Victorian Government recognises the associated value as an avoided cost.

We must make our determination of the minimum feed-in tariff rates no later than 28 February.[6] The minimum tariff rates we set apply from 1 July of each year.

See Appendix A for additional details on our role in setting the minimum feed-in tariff including our objectives and the matters we must have regard to.

What is outside the scope of our decision

We do not regulate the feed-in tariff rates set by retailers who have less than 5,000 customers. They are free to set their own feed-in tariff rates.

Solar customers on the 60 cents per kWh premium feed-in tariff, which will remain in place until 2024, are not affected by our feed-in tariff determination.

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[4] Clean Energy Council, Postcode data for small scale installations, accessed 15 October 2020, http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations#Installation-numbers-for-smallscale-systems-by-stateterritory.

[5] Electricity Industry Act 2000, s. 40FBB(3)(a),(b) and (c).

[6] Electricity Industry Act 2000, s. 40FBB(2)(a).

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From 1 July 2021, we propose the minimum feed-in tariff rates set out in Table S.1.

The proposed single feed-in tariff rate of 7.1 cents per kWh is 30 per cent lower than the single feed-in tariff rate of 10.2 cents per kWh for 2020–21. The proposed time-varying feed-in tariff rates are also lower than the time-varying feed-in tariff rates for 2020–21.

Table S.1 – Proposed minimum feed-in tariff rates to apply from 1 July 2021, excluding GST*

Single FiT rate	Time-varying FiT rates (c/kWh)		
	Off peak	Shoulder	Peak
All times	Weekdays: 10pm-7am Weekends: 10pm-7am	Weekdays: 7am-3pm, 9pm-10pm Weekends: 7am-10pm	Weekdays: 3pm-9pm Weekends: n/a
7.1	7.1	6.5	11.7

* feed-in tariff rates of solar customers registered for GST are subject to GST.[7] Most residential solar owners are not registered for GST, hence their feed-in tariff rates will not be subject to GST.

The decrease in minimum feed-in tariff rates is mainly due to a forecast reduction in wholesale electricity prices for 2021–22. The change in avoided transmission and distribution losses was only minor. The avoided social cost of carbon and human health costs have remained at current levels.

Annual fluctuations in the minimum feed-in tariff rates largely reflect movements in forecast wholesale electricity prices, which account for 63 per cent of the feed-in tariff rates in 2021–22.[8] Reduced gas prices are also driving wholesale electricity prices down. In addition, increased rooftop solar exports are also exerting downward pressure on daytime electricity prices, affecting the level of the minimum feed-in tariff.

The shoulder feed-in tariff rate is lower than the off peak rate because wholesale electricity prices are at the lowest during daytime when solar exports are high. Also, the minimum off peak feed-in tariff rate captures a small morning peak in wholesale electricity prices, hence the slightly higher value compared to the shoulder feed-in tariff rate.

[7] Australian Tax Office, Electricity and Gas Industry Partnerships, accessed 15 October 2020, https://www.ato.gov.au/business/gst/in-detail/gst-issues-registers/electricity-and-gas-industry-partnerships---issues-register/?page=1#1_Are_there_any_GST_implications_for_owners_of_grid_connected_solar_power_generation_equipment_in_respect_of_electricity_supplied_via_the_network

[8] Wholesale electricity prices accounted for almost 71 per cent of the 2020-21 feed-in tariff rates.

When we make the final decision in February 2021, we will update the feed-in tariff rates in table S.1 to reflect wholesale electricity prices in the futures markets at that time.

Chapter two explains the methodology we used in setting the minimum feed-in tariff rates. Frontier Economics has modelled the wholesale electricity price forecasts on our behalf. Their report is published on our website.

The current Victorian feed-in tariff is higher compared to other jurisdictions

The current feed-in tariff rates in Victoria tend to be higher than the regulated feed-in tariff rates in other Australian jurisdictions, which range from 6–8.4 cents per kWh. While this particular comparison is between the current feed-in tariff rates, we expect this trend to continue into next year. The 2.5 cents per kWh avoided social cost of carbon is contributing to higher feed-in tariff rates in Victoria (see Appendix F – Feed-in tariff rates in other jurisdictions for more detail).

Time varying feed-in tariff will remain optional at this stage

In 2020–21, we did not mandate a time-varying feed-in tariff. We engaged Frontier Economics to conduct a cost-benefit analysis of mandating a time-varying feed-in tariff. This analysis showed that a time-varying feed-in tariff is unlikely to lead to economic benefits.[9] Higher retail electricity tariffs provide a much stronger price signal than the minimum feed-in tariff rates. Solar customers are better off minimising their purchase of electricity from the grid by using their own solar generation to avoid paying the higher retail electricity tariffs.

The coronavirus pandemic has had some effect on the retail electricity market, in particular on gas prices and demand for electricity. While retail electricity rates are likely to fall as a result, this is not sufficient to make a time-varying feed-in tariff economically beneficial for solar customers. Therefore, we propose not to mandate a time-varying feed-in tariff at this stage. However, retailers are free to offer time-varying feed-in tariff rates if they prefer.

If there is a stronger case for mandating a time-varying feed-in tariff in the future (for instance, significant changes in retail electricity prices, changes in government policy, take up of batteries or new technologies) we will look into the costs and benefits of mandating a time-varying feed-in tariff again and seek stakeholders' feedback.

[9] Frontier Economics, Cost-benefit analysis of mandating time-varying feed-in tariff, February 2020.

A feed-in tariff rate set at retail electricity rates would not be consistent with our objectives

Some solar customers have asked us why the feed-in tariff rates are lower than retail electricity rates. Others suggested that the feed-in tariff rates should be the same as the retail electricity rates.

The minimum feed-in tariff rates will always be lower than retail electricity rates. The minimum feed-in tariff rates reflect the true value of solar exports to the grid. When retailers on-sell the exported electricity to their other customers they incur additional costs such as network charges, retail overheads and costs associated with complying with environmental programs. These costs are recovered through general retail tariffs.

Retailers would incur losses if the minimum feed-in tariff rates are set at the level of retail electricity rates. They would most likely recover these losses by increasing retail electricity rates. As a result, non-solar customers who do not directly benefit from the feed-in tariff would end up paying more to ensure solar customers are getting a more generous tariff. This could have a negative effect on non-solar customers including vulnerable consumers. It would not be consistent with our objectives of promoting the long term interests of consumers and protections for customers, including assisting customers who are facing payment difficulties.[10]

Customer notification

In our 2020–21 feed-in tariff review, we signalled that we would undertake a consultation on the Energy Retail Code to ensure a fair and common approach to notifying solar customers about changes to the minimum tariff.

We propose that retailers notify their solar customers of annual feed-in tariff rate changes at least five business days before the change takes effect. We also propose that changes to the Energy Retail Code should come into effect on 1 June 2021.

We are also interested whether stakeholders have alternative, more effective ways to ensure customers are notified of impending feed-in tariff changes.

Chapter three sets out our reasoning for the proposed amendments to the Energy Retail Code and Appendix D sets out our proposed amendments.

[10] Essential Services Commission Act 2001, s.8; Electricity Industry Act 2000, s. 10.

Solar customers will benefit more from using their own electricity

The feed-in tariff provides a financial benefit to solar customers when they export unused electricity but the main benefit for solar customers is the savings from using the electricity they generate in their home or business – rather than paying retail electricity rates.

Retail electricity rates are generally much higher than the feed-in tariff rates. It is in solar customers' interest to use as much of the electricity they generate from their solar panels to avoid paying the higher retail electricity rates. This will reduce their electricity bills far more than exporting the power they generate to the grid.

Changing the pattern of electricity usage is key to maximising savings. During the day when the sun is shining, solar customers should run their washing machine, dishwasher, water heater and pool pump (if any). If they are not home during the day, they can set a timer to have these appliances start at certain times during the day or switch them on just before they leave the house.

Sustainability Victoria notes that a pool pump could be responsible for 20–30 per cent of a customer's energy bill.[11] For illustration purposes we estimate that running a 1,100 watts pool pump during day time could cost about $535 a year, on average.[12] If a timer is used to take advantage of more solar hours, pool pump running costs could fall by $178 a year.[13]

We acknowledge that energy cost savings will depend on the size and energy rating of the pool pump, the number of operating hours during summer and non-summer months, retail electricity rates and feed-in tariff rates and the size and orientation of the solar panels.

Consider both feed-in and retail electricity tariff offers when shopping around

It is important not to focus solely on the feed-in tariff rates when deciding on an electricity plan. Some plans which offer higher feed-in tariff rates may have less competitive prices for the electricity that you consume from the grid, and this may more than offset any benefit from the higher feed-in tariff.

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[11] Sustainability Victoria, Pool heating and pumps, accessed 11 November 2020, https://www.sustainability.vic.gov.au/You-and-your-home/Save-energy/Pool-heating-and-pumps.

[12] Assumptions used: 1,100 watts pool pump (equivalent to 1.1 kW); 12 hours running time per day (3 hours during solar hours and 9 hours during non-solar hours); pool pump will be run for half a year (182 days); AGL United Energy Victorian Default Offer rates of 29.7 cents/kWh. [1.1*9*182*0.297 = $535.10].

[13] Assumptions used:1,100 watts pool pump (equivalent to 1.1 kW); 12 hours running time per day (6 hours during solar hours and 6 hours during non-solar hours); pool pump will be run for half a year (182 days); AGL United Energy Victorian Default Offer rates of 29.7 cents/kWh. [$535.10-(1.1*6*182*.297) = $178.40]. The use of a timer has reduced the amount of electricity purchased from the grid.

You should think of your energy consumption and generation as a whole when you choose an electricity plan: including both the rates you will pay for the electricity you use and the electricity you export.

We invite feedback on our draft decision

We are interested in hearing your views on our draft decision. Submissions are now open and can be made anytime up until **5pm, 8 January 2021**. Our final decision will be made by 28 February 2021.

To make a submission on this paper please go to Engage Victoria's website: engage.vic.gov.au/minimum-feedin-tariff-review-2021-22.

If this presents an issue please email us at fitreview@esc.vic.gov.au or call us on 03 9032 1300 to discuss other options for making a submission.

All submissions come under the commission's submissions policy. Submissions will be made available on the commission's website, except for any information that is commercially sensitive or confidential. Submissions should clearly identify which information is sensitive or confidential and provide the reasons why they should not be made publicly available.

1. Minimum feed-in tariffs draft decision

Our draft decision is to set two minimum feed-in tariffs to apply from 1 July 2021:

- a minimum single feed-in tariff rate **and/or**
- a minimum time-varying feed-in tariff, comprising peak, shoulder and off peak rates.

Retailers can offer feed-in tariff rates higher than the minimum if they choose to.

Some owners of small-scale renewable generators may prefer the simplicity of a single feed-in tariff while others may favour a more market reflective rate, such as the time-varying tariff. Under the time-varying feed-in tariff, a customer is paid a price that better reflects the wholesale cost of electricity at the time they sell electricity into the grid.

Chapter two outlines the approach we have used to calculate the proposed tariffs.

Proposed minimum feed-in tariff rates to apply from 1 July 2021

The proposed minimum single feed-in tariff rate is lower than the current rate

The single feed-in tariff rate is the tariff your energy company pays you for electricity you export to the grid. This tariff rate applies regardless of the time of day or day of the week.

The proposed minimum single feed-in tariff rate of 7.1 cents per kWh represents a 30 per cent decrease from the tariff that we set for 2020–21. This is driven by the reduction in the wholesale electricity price component of the tariff, at least partly because of the coronavirus pandemic. The pandemic has contributed to lower international prices for oil, gas and coal, leading to lower fuel prices for some power stations in the National Electricity Market and as a result lower wholesale electricity prices. See chapter 3 of Frontier Economics' report for details.[14]

Table 1.1 – Minimum single feed-in tariff – 2021–22 draft rate (cents per kWh)

	Single rate to apply at all times
Minimum feed-in tariff	7.1

Retailers who choose to offer the single feed-in tariff rate must offer customers at least the minimum tariff rate that we set in our final decision. Retailers can offer rates above this.

[14] Frontier Economics, Wholesale price forecasts for calculating minimum feed-in tariff, a draft report for the Essential Services Commission, November 2020, chapter 3.

Currently, there are four Victorian retailers that offer a single feed-in tariff rate that exceeds the minimum single tariff rate of 10.2 cents per kilowatt hour – these retailers offer 12 cents per kilowatt hour.[15]

Some retailers have higher feed-in tariffs that are only available under special plans or terms and conditions, for example if you also buy solar panels from that retailer (see Appendix F for examples). It's important to understand the terms and conditions of feed-in tariff rates offered by retailers as some plans may have less competitive prices for the electricity you consume from the grid that may outweigh the benefit received from a higher feed-in tariff.

The proposed time varying feed-in tariff rates are lower than the current rates

Table 1.2 sets out the proposed time-varying feed-in tariff rates for 2021–22 and the relevant periods, or time blocks, in which the time-varying tariff rates apply. Retailers offering the time varying tariff must offer the minimum rate that applies in each time block. As with the single feed-in tariff rate, retailers can offer rates above the minimum we set in one or all of the time blocks. So long as retailers meet the minimum rate at each point in time, there is significant flexibility for designing their own time-varying tariff profiles.

Table 1.2 – Minimum time-varying feed-in tariff – 2021–22 draft decision rates (cents per kWh) (solar-weighted)

Time blocks	Off peak	Shoulder	Peak
Minimum feed-in tariff	7.1	6.5	11.7
Period	Weekdays and weekends: 10pm-7am	Weekday: 7am-3pm, 9pm-10pm Weekend: 7am-10pm	Weekday:3pm-9pm Weekend: n/a

The minimum time-varying feed-in tariff rates are lower across all time blocks than was estimated in 2020–21 for the same reasons that the single tariff rate is lower.

For 2021–22 the off peak feed-in tariff is higher than the shoulder tariff because the off peak time period captures a small morning peak in electricity prices (night time prices are not captured since solar exports do not occur at night). The shoulder tariff captures a dip in national electricity market prices during the middle of the day, which also coincides with higher quantities of solar exports.

[15] Publicly available information submitted to the government energy price comparator website Victorian Energy Compare as at 13 October 2020, https://compare.energy.vic.gov.au/.

Time varying feed-in tariff will remain optional for now

We are keeping a time-varying feed-in tariff optional at this time because it is not likely to be beneficial to consumers as shown by Frontier Economics' cost benefit analysis included in our last review.[16]

Frontier Economics found that mandating a time-varying feed-in tariff is unlikely to change behaviour for a substantial number of solar customers at this point in time because:

- retail electricity tariffs are much higher than the minimum feed-in tariff rate and
- the difference between the time-varying feed-in tariff rates is much higher for retail electricity tariffs than for the minimum tariff rates.

This means solar customers would be better off minimising their purchase of electricity from the grid to avoid the higher retail electricity price and self-consuming their solar generation.

Frontier Economics also estimated the costs to retailers of mandating a time-varying feed-in tariff. Our analysis of those numbers found that while there would be some costs incurred, these costs are expected to be minimal.

There have been no significant changes to the electricity market that would have changed the benefits and costs of time-varying feed-in tariff since last year.

The coronavirus pandemic has had some effect on the retail electricity market through wholesale prices. While there is likely to be a fall in retail electricity rates this is not sufficient to make a time-varying feed-in tariff economically beneficial for solar customers. As a result, we propose not to mandate a time-varying feed-in tariff at this stage. However, retailers are free to offer the time-varying tariff rates if they wish.

In future there may be a stronger case for mandating a time-varying feed-in tariff. For instance, a significant reduction in retail electricity prices, changes in government energy policy, accelerated battery up take or other relevant new technologies may lead us to look into the costs and benefits of mandating a time-varying tariff again.

Components of the minimum feed-in tariff

Table 1.3 below sets out how each cost component contributes to the overall feed-in tariff for both single tariff rate and time-varying options. Annual changes in the level of tariff rates are affected

[16] Frontier Economics, Cost-benefit analysis of mandating time-varying feed-in tariff, February 2020.

primarily by changes in forecast wholesale electricity prices which account for 63 per cent of the feed-in tariff on average for 2021–22.

Table 1.3 – Components underpinning the 2021–22 minimum feed-in tariff (cents per kWh)[17]

Component	Single rate	Off-peak	Shoulder	Peak
Wholesale electricity prices	4.31	4.31	3.74	8.66
Avoided market fees and ancillary service charges	0.07	0.07	0.07	0.07
Transmission and distribution loss adjustment (*multiply*)	0.0486	0.0486	0.0486	0.0486
Value of avoided transmission and distribution losses	0.21	0.21	0.19	0.42
Value of avoided social cost of carbon	2.49	2.49	2.49	2.49
Value of avoided human health costs	0.00	0.00	0.00	0.00
Total (rounded)	**7.1**	**7.1**	**6.5**	**11.7**

Consider your whole energy bill when looking for better feed-in tariff deals

As the export profile is different for each individual customer, the best combination of feed-in tariff rates and retail usage tariffs will be different for everyone. It is important not to focus only on the feed-in tariff rates when deciding on an electricity plan. Some plans which offer higher feed-in tariff rates have less competitive prices for the electricity that you consume from the grid, and this may more than offset any benefit from the higher feed-in tariff. You should think of your whole energy bill which includes what you will pay for the electricity you use as well as the electricity you export.

[17] Table may not add due to rounding.

2. How we set the minimum feed-in tariff rates

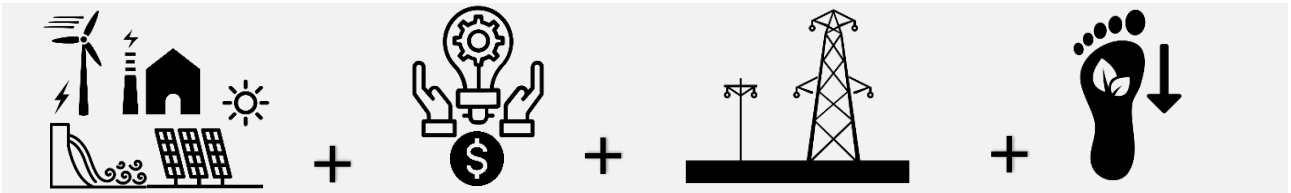
The minimum feed-in tariff rates aim to reflect the costs that a retailer avoids when purchasing electricity from a small scale renewable generator. In other words, it is an estimate of the price a retailer would pay if the electricity provided by small scale renewable generators needed to be purchased in the National Electricity Market.

We have adopted the same approach we used in our previous feed-in tariff review, to determine the minimum tariff rates applicable from 1 July 2021. Details on the method used to calculate the minimum feed-in tariff rates can be found in Appendix G – Technical methodology.

The factors we must consider in setting the minimum feed-in tariff

In addition to the wholesale electricity prices, the avoided costs included in the minimum feed-in tariff rate calculation are outlined in Figure 2.1. Under the Electricity Industry Act 2000, we must have regard to these costs in setting the annual minimum tariff rates.[18]

Figure 2.1 – Costs retailers avoid when purchasing from a small scale renewable generator



Wholesale electricity prices	Other fees and charges	Network or line losses	Social cost of carbon
Retailers purchase electricity from the wholesale market to serve their customers. This cost is avoided when a small renewable generator exports to the grid.	Retailers incur other fees and charges reflecting the costs of operating the National Energy Market. These are avoided when a small renewable generator exports to the grid.	Line losses occur when electricity is transported through transmission and distribution networks. This is minimised when a small renewable generator exports to the grid.	Carbon emissions are reduced when energy is sourced from small scale renewable generators. The Victorian Government recognises the associated value as an avoided social cost.

[18] Electricity Industry Act 2000, s. 40FBB(3).

The avoided human health costs attributable to a reduction in air pollution (to the extent that renewable energy generation replaces non-renewable energy generation) is another cost component we must consider in calculating the minimum feed-in tariff.

The steps for setting the minimum feed-in tariff

In line with previous years, we have used the following process to determine the minimum feed-in tariff:

1. Develop a forecast of wholesale electricity prices for the relevant year (2021–22):
    a) For the minimum single feed-in tariff rate – using the forecast wholesale prices, calculate the average value of wholesale electricity weighted by the export share during the hours that solar photovoltaic systems typically export to the grid.
    b) For the minimum time-varying feed-in tariff rates – using the forecast wholesale prices, calculate the average value of wholesale electricity weighted by export share, during the hours that solar photovoltaic systems typically export to the grid, within each time block under this tariff structure.
    c) Incorporate market fees and ancillary service charges that retailers avoid when they purchase electricity from small scale generators rather than from the wholesale market.
2. Adjust the resulting values to account for avoided network losses.
3. Incorporate any value associated with the avoided social cost of carbon and avoided human health costs.[19]

With the exception of the different time periods used to calculate the wholesale component of the feed-in tariff, all other elements of the above methodology are identical for both the single tariff rate and time-varying rates.

We used a futures market approach to forecast wholesale electricity prices

Calculating the minimum feed-in tariff rates requires us to estimate the prices retailers avoid paying on wholesale electricity purchases when a small scale renewable generator exports electricity to the grid.

[19] The Victorian Government gives an indication of these values, and we take them as a straight pass through into our modelling.

We have used a futures market approach to forecast the wholesale prices that underpin the tariff decision. This is the same approach we used in our 2020–21 and 2019–20 tariff decisions (see Appendix G – Technical methodology for more information) and our Victorian Default Offer decisions.[20]

Many stakeholders supported our approach in using the futures market method.[21] The Victorian Council of Social Service supported our use of the futures approach because it is consistent with the methodology used by other Australian regulators to develop feed-in tariffs, allowing consumer advocates to better assess the reasonableness of tariffs in different jurisdictions.[22] The council also noted the futures market approach is more transparent than a market modelling approach.[23] AGL told us it agreed with the use of a futures market method for estimating wholesale electricity costs, as it more accurately reflects a retailer's costs than other approaches.[24] Momentum Energy told us that it considered that a futures market based approach provides the best approximation of the wholesale market prices faced by retailers.[25]

Based on advice provided by Frontier Economics, the market's expectation of what wholesale prices will be in 2021–22 is best represented by Victorian baseload swap futures contracts that are traded on the Australian Securities Exchange.

Frontier Economics will update these estimates for our February 2021 final decision, to reflect market expectations at that point in time. These updates are likely to result in a difference between the estimates contained in our draft and final decisions.

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[20] Essential Services Commission, Victorian Default Offer to apply from 1 July 2019: Advice to the Victorian Government. May 2019; Essential Services Commission, Victorian Default Offer to apply from 1 January 2020: Final report, November 2019; Essential Services Commission, Victorian Default Offer 2021: Draft Decision, September 2020.

[21] We acknowledge that some stakeholders did not support our approach, although they sometimes failed to give reasons for doing so, while still others suggested linking the feed-in tariff to the retail electricity tariff was a more appropriate methodology. We have addressed other stakeholders' feedback on this in the following final decisions and report: Essential Services Commission 2020, Minimum electricity feed-in tariffs to apply from 1 July 2020: Final Decision, 25 February; Essential Services Commission 2019, Minimum electricity feed-in tariffs to apply from 1 July 2019: Final Decision, 28 February; Frontier Economics 2020, Wholesale Price Forecasts for Calculating Minimum Feed-in Tariff: Final Report for the Essential Services Commission, 24 February.

[22] VCOSS 2019, submission on Minimum electricity feed-in tariff to apply from 1 July 2019: Draft Decision, 11 January.

[23] VCOSS 2019, submission on Minimum electricity feed-in tariff to apply from 1 July 2019: Draft Decision, 11 January.

[24] AGL Energy 2018, submission on developing a reference price methodology for Victoria's energy market: consultation paper, 17 April.

[25] Momentum Energy 2018, submission on developing a reference price methodology for Victoria's energy market, 17 April.

Calculating the minimum single feed-in tariff rate

Almost 100 per cent of small scale renewable generation in Victoria is produced by solar panel systems.[26] Solar panels typically export electricity to the grid during day. Unmodified futures prices are not appropriate for setting the feed-in tariff rates because feed-in tariff exports almost exclusively happen during the day.

To calculate the minimum feed-in tariff we use prices from the times when exports occur. This more accurately reflects the value of the electricity produced by small scale renewable systems, accounting for variations in the wholesale value of electricity that occurs throughout the day.

Solar weighting ensures that the value of electricity during periods in which solar panels are not exporting, or generating electricity – such as at night – is not included in the calculation of the single feed-in tariff rate.

Calculating the minimum time-varying feed-in tariff rates

Our previous feed-in tariff final decision determined both a minimum single feed-in tariff rate and minimum time-varying tariff rates. We allow retailers to select whether to offer customers time-varying feed-in tariff rates, a single tariff rate or both.

We have kept the same off-peak, shoulder and peak time blocks for 2021–22 as we used in our previous feed-in tariff reviews. These are set out in table 2.2.

Table 2.2 – Time block structure for the time-varying feed-in tariff

Period	Weekday	Weekend
Off peak	10pm-7am	10pm-7am
Shoulder	7am-3pm, 9pm-10pm	7am-10pm
Peak	3pm-9pm	n/a

The same forecast wholesale prices for 2021–22 are used for calculating the single and time varying feed-in tariff rates. But for the latter, we calculated the weighted average value of wholesale electricity for each time block.

[26] Australian Government Clean Energy Regulator, Postcode data for small scale installations, accessed 27 October 2020, http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations#Installation-numbers-for-smallscale-systems-by-stateterritory.

Other costs associated with wholesale electricity supply

Market fees and ancillary service charges

When retailers purchase energy from the wholesale spot market, they must pay market fees and ancillary service charges to the Australian Energy Market Operator.[27] Retailers avoid these fees when they source electricity from small scale renewable generators. We have included market fees and ancillary service charges in our calculation of avoided costs.[28] This is consistent with the approach we used for the 2020–21 feed-in tariff review with the exception of the following changes.

Up to 1 July 2020, the market operator recovered the National Transmission Planner costs from energy retailers via a market fee. The market operator will not charge retailers this fee from 2021–22.[29] We have therefore removed it from our calculation of avoided costs.

Also, the National Electricity Market fee levied by the market operator is set in advance for each year through its annual budgeting process. However, the market operator has not provided an estimate of the market fee for 2021–22. This is due to several factors that may impact fees beyond 2020–21 including the participant fee structure review currently underway, new regulatory developments, and unforeseen revenue and system impacts and new responsibilities resulting from the coronavirus pandemic.[30] Therefore, we have used the market operator's budget 2020–21 market fee for retailers as a proxy for 2021-22 in this review. If a new estimate of the market fee for 2021–22 becomes available before the release of our final decision in February 2021, we will incorporate it into our feed-in tariff calculation.

Table 1.3 shows that the above changes only have a minor impact on the feed-in tariff rates.

Network or line losses

Most of the electricity supplied to the National Electricity Market is produced by large central generators located some distance away from the points where electricity is consumed. Electricity is

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[27] The Australian Energy Market Operator manages electricity and gas systems and markets across Australia. This includes the National Energy Market (NEM), which connects the power systems of Queensland, New South Wales, the Australian Capital Territory, Victoria, South Australia and Tasmania.

[28] Section 40FBB(3) of the Electricity Industry Act 2000 requires us to have regard to 'prices of electricity in the wholesale electricity market' when determining a rate for 'purchases of small renewable energy generation electricity'.

[29] COAG Energy Council 2020, National Electricity Amendment (Integrated System Planning) Rule 2020, March 2020, p. 3, http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/ESB%20Final%20Approved%20ESB%20Recommended%20National%20Electicity%20Amendment%20%28ISP%29%20Rule%202020.pdf.

[30] Australian Energy Market Operator 2020, 2020–21 AEMO Budget and Fees, June 2020, p. 5, https://www.aemo.com.au/-/media/files/about_aemo/energy_market_budget_and_fees/2020/budget-and-fees---final.pdf.

transported to households and other users via a transmission and distribution network (also known as the grid). During this transportation process, some of the electricity is lost as heat. These are known as ‘network losses’ or ‘line losses’.

Small scale renewable generation reduces line losses, since electricity does not need to be transported far from the point of generation to the point at which it is consumed. The level of the associated cost saving varies depending on the location of the generation facility (and other factors such as the quality of the line and the amount of electricity flowing through it). For households with rooftop solar PV, the point of generation and consumption is the same – the house. We have incorporated their cost savings into the feed-in tariff calculation by applying a ‘loss factor’ to the avoided cost of purchasing electricity in the wholesale market, including market fees and ancillary service charges.

We have used the market operator’s estimates of distribution loss factors and marginal loss factors for 2020–21 to develop a loss factor for Victoria.

Further details on the calculation of network losses and market fees can be found in Appendix G – Technical methodology.

Social cost of carbon and human health costs remain at historical levels

Social cost of carbon

Energy sold in the National Electricity Market is generated using a variety of fuel sources and technologies. These include coal, natural gas, biomass, wind, solar and hydro-electric power.

The damage caused by emissions released during gas or coal-fired generation impose a cost to the society (known as the social cost of carbon). Carbon emissions are reduced when energy is sourced from small scale renewable generators in place of fossil fuel generators. The avoided social cost of carbon reflects the value of these emissions reductions.

The Victorian Government’s Order in Council published in February 2017 specifies a methodology and factors for determining the avoided social cost of carbon which we must have regard to when setting the feed-in tariff.[31]

Following the approach in the Order results in an avoided social cost of 2.5 cents per kWh of electricity exported to the grid by a small scale renewable generator. This is the same value as for 2020–21. This value is incorporated into the calculation of both the single feed-in tariff rate and

[31] Victorian Government 2017, Victoria Government Gazette No. S 36, Tuesday 21 February 2017, Order specifying a methodology and factors for the determination of the avoided social cost of carbon (Order in Council).

time-varying feed-in tariff for 2021–22 (more details can be found in Appendix G – Technical methodology).

Human health costs

The Order in Council does not specify a factor or method for determining the avoided human health costs attributable to a reduction in air pollution. They are also not priced in the National Electricity Market.

We reviewed the associated health benefits as part of our inquiry into the energy value of distributed generation in 2015.[32] However, due to a lack of sufficient evidence and data, we could not place a monetary value on them. We remain of the same view now. The Department of Environment, Land, Water and Planning has noted similar issues around data and raised concerns about reliably estimating these health costs in a Victorian context.[33] Currently, the avoided human health costs are set at 0 cents per kWh. If the Victorian Government publishes a methodology in the future, we will address it in our feed-in tariff calculation.

[32] Essential Services Commission 2016, The energy value of distributed generation, August 2017, pp. 62-63, https://www.esc.vic.gov.au/sites/default/files/documents/Distributed-Generation-Inquiry-Stage-1-Final-Report-Energy-Value-FINAL-20160916.pdf.

[33] Department of Environment, Land, Water and Planning 2019, Estimating the health costs of air pollution in Victoria, pp. 3-5, https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0022/421717/Final_Health-costs-of-air-pollution-in-Victoria.pdf.

3. Customer notification

In this chapter we set out our draft decision on the way retailers must notify their customers of changes to feed-in tariff rates. We consider solar customers should be notified of changes to the feed-in tariff before the new rates take effect.

Our analysis found that many retailers' terms and conditions in relation to feed-in tariff were unclear about when notification of changes would take place. To address this, we have proposed to amend the Energy Retail Code and require retailers to issue a 'feed-in tariff alert' before rate changes take effect.

Solar customers are not being notified in advance of changes to feed-in tariff rates

In last year's review of retailers' feed-in tariff terms and conditions, we found that the most common notification requirement for a feed-in tariff change was 'as soon as practicable and no later than the next billing period'. This is at odds with giving customers clear, timely and easily understood information to allow them to evaluate the ongoing suitability of their contract before any changes come into effect. Therefore, in last year's final decision for the feed-in tariff, we wrote:

> We expect retailers to inform their customers of changes to the FiT rates that will be credited to a customer's bill prior to any change in the rates coming into effect. Retailers are encouraged to consider adopting a consistent approach to the notification requirement that applies to price and benefit changes. The commission will consult on amendments to the Energy Retail Code relating to notification requirements to customers of changes in FiT rates in the near future.[34]

Following our decision last year, we have reviewed customer complaints and enquiries, and again reviewed retailers' most current terms and conditions to review whether the customer notification of changes in the feed-in tariff rates continue to be an issue.

We found that a lack of timely notification of feed-in tariff rate changes appears to remain a concern for some customers. Further, many retailers' terms and conditions do not give customers certainty about when they can expect to be notified about feed-in tariff rate changes, which limits customers' ability to evaluate their contract before new feed-in tariff rates take effect.

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[34] Essential Services Commission, Minimum electricity feed-in tariff to apply from 1 July 2020, February 2020, p.19.

Customer complaints and enquiries

The Energy and Water Ombudsman (Victoria) reported in their 2019–20 annual report that some customers with solar systems had raised billing complaints including complaints about feed-in tariff rate changes without notice.[35]

Further, customers contact the commission directly with enquiries on their energy supply, including enquiries on the feed-in tariff. We received a large number of feed-in tariff enquiries compared to general customer enquiries. In 2020, we found a large portion of these enquiries occurred from July onwards. These findings can indicate that a high number of solar customers could first become aware of changes in feed-in tariff rates only after the rate changes have come into effect.

Contract terms and conditions

Following our review last year, we again undertook a desktop analysis of the terms and conditions in retailers' feed-in tariff contracts. Overall, we found retailers do not have a common approach to notifying solar customers of changes in feed-in tariff rates. This does not give solar customers certainty about when they will be notified of their feed-in tariff rates change or whether they will be notified before the change.

Terms and conditions differ across retailers and are unclear about when customers can expect to be notified about feed-in tariff rate changes. These terms and conditions included:

- as soon as practicable, but no later than your next bill
- in advance
- subject to change at any time
- we will let you know about changes in accordance with law.

As was the case last year, 'as soon as practicable, but no later than your next bill' still appears to be the most common practice adopted by retailers in relation to notifying feed-in tariff rate changes.

We have included further detail of our desktop analysis of retailers' terms and conditions in Appendix E.

[35] Energy and Water Ombudsman (Victoria), Annual Report 2020, 2020.

Solar customers should be notified of changes in feed-in tariff rates in the same way as changes to other benefits and prices

Currently, the Energy Retail Code requires retailers to provide customers with a bill change alert at least five business days before prices or benefits change. The objective of the bill change alert is to give small customers an entitlement to clear, timely and easily understood information.

This allows customers to evaluate the ongoing suitability of their retail contract, before any changes that will affect their bill occur, and take steps to find an alternative retail contract.

We consider solar customers should receive the same entitlement of early notification of feed-in tariff rate changes as other customers in relation to benefit or price changes under the code.

We also consider that it is reasonable for retailers to have a consistent approach to proactively notifying customers of feed-in tariff changes, which has not been the case based on our analysis. This helps to ensure a consistent customer experience across retailers.

We propose a new obligation on retailers to alert customers of changes to feed-in tariff rates. We propose to implement our draft decision through amendments to clause 70L of code.

We note that this clause currently applies to benefit and price changes and will need to be amended to allow it to cover feed-in tariff rate changes.[36] We also propose to include a requirement for retailers to include information on the minimum feed-in tariff set by the commission at the time of the change. This would allow customers to clearly see how their offer compares with the minimum feed-in tariff. To reiterate, retailers can offer feed-in tariff rates that are higher than the minimum rate we decide on.

However, we propose that only customers directly affected by changes to feed-in tariff rates be notified in advance, and therefore the obligations would only apply to solar customers. This means that customers who do not have solar PV installations, will not receive the notification. The feed-in tariff alert must contain the information shown in the box below. We propose the following amendments to the Energy Retail Code. The schedule of amendments can be found in Appendix D.

[36] The feed-in tariff is not a price, it is credit payable by the retailer to a small customer. The feed-in tariff is not a benefit provided to a customer under a customer retail contract. This is because a customer retail contract is defined as a contract between a small customer and a retailer for the provision of customer retail services. Customer retail services means the sale of energy by a retailer to a customer at premises. The sale of energy by a customer back to the retailer is commonly governed by a separate contract following acceptance of the offer by the retailer made in accordance with s. 40FB of the Electricity Industry Act 2000. Further, the feed-in tariff is not a benefit provided for a 'minimum term or a fixed benefit period', as the credit will be available for the duration of the contract.

Draft decision

We require retailers to issue their solar customers a feed-in tariff change alert. The alert must:

- be in writing (which includes email or SMS)
- use the customer's preferred method of communication
- be issued at least five business days before the feed-in tariff rate change takes effect
- state the customer's metering identifier
- state the customer can use a price comparator website to compare offers and provide the name of the site and web address as well as a hyperlink to the site
- include the nature of the feed-in tariff change and the date that it will take effect:
  - identify the customer's current feed-in tariff rates
  - identify the customer's feed-in tariff rates as varied by the change
  - state the minimum rate set by the commission at the time of the change.

Implementation date

We propose the changes to the Energy Retail Code should come into effect on 1 June 2021. We consider this requirement will not place unreasonable regulatory burdens on retailers because they will already have similar processes to notify customers of other benefit and price changes.

Draft decision

We require retailers to implement the changes to Energy Retail Code in relation to notification of feed-in tariff changes from 1 June 2021.

Stakeholder feedback

We are interested in stakeholder's views on our proposed requirements to ensure customers are notified of retailers' changes to the feed-in tariff in advance of the change.

We are also interested whether stakeholders have alternative, more effective ways to ensure customers are notified of impending feed-in tariff changes.

Appendix A – What is a feed-in tariff?

A feed-in tariff is the rate at which customers are credited when they export excess energy generation from their small-scale solar, wind, hydro or biomass generation sources.

What is a minimum feed-in tariff?

The feed-in tariff is the minimum credit paid by a relevant retailer to each customer per kilowatt hour (kWh) of electricity exported to the grid, referred to as a minimum feed-in tariff or feed-in tariff.[37]

This applies to small renewable energy generation facilities with capacities of less than 100 kilowatts (kW), producing electricity using renewable energy sources such as wind, solar, hydro or biomass.[38] An important exception is that a 'small renewable energy generation facility' does not include a generating facility that is under the premium or transitional solar feed-in tariff scheme.[39]

Further, the Governor in Council, by order published in the Government Gazette, can specify a facility or class of facility that generates electricity in any way as a small renewable energy generation facility.[40] The Department of Environment, Land, Water and Planning advised the commission that no order has been issued about this matter to date.[41]

Retailers may offer rates above the minimum feed-in tariff rates and can offer either a single rate and/or a time-varying rate. Since 2018–19 the commission has set the minimum rate for both the single and time-varying feed-in tariff that a retailer can offer.

The single feed-in tariff rate is paid to each customer regardless of the time of day the energy is being exported back to the grid.

The time-varying feed-in tariff rate is a peak, shoulder and off-peak structure of rates and is intended to reflect more precisely the underlying value of electricity, which is based on a wholesale electricity market with prices changing every 30 minutes. It tends to be higher at times of peak

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[37] A relevant retailer is a person that holds a licence to sell electricity and sells to more than 5,000 customers. See section 40F Definitions of the Electricity Industry Act 2000

[38] Electricity Industry Act 2000, s. 40F(1).

[39] Electricity Industry Act 2000, s. 40F(1).

[40] Electricity Industry Act 2000, s. 40F(2).

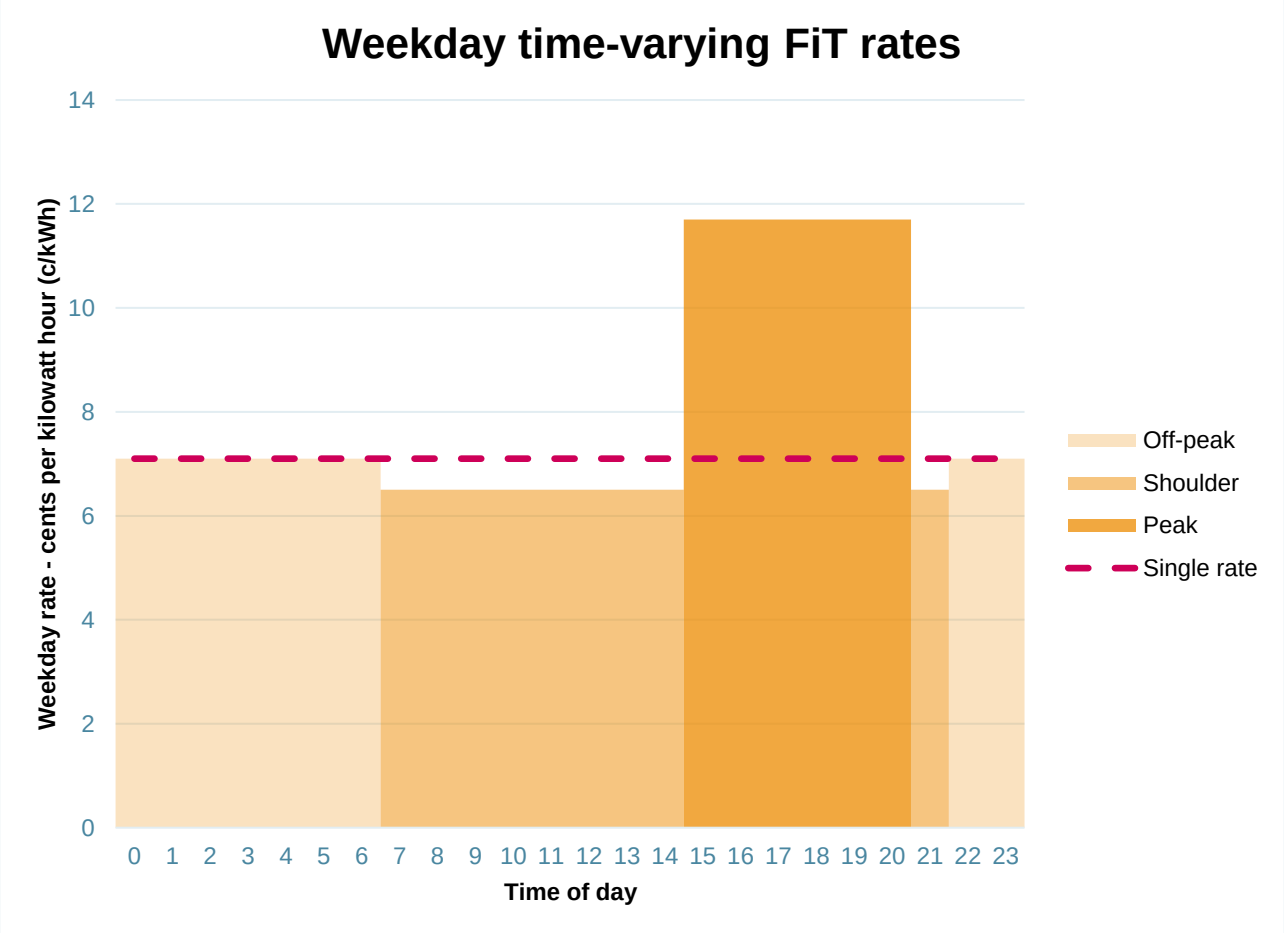
[41] Department of Environment, Land, Water and Planning email to the commission dated 30 October 2020.

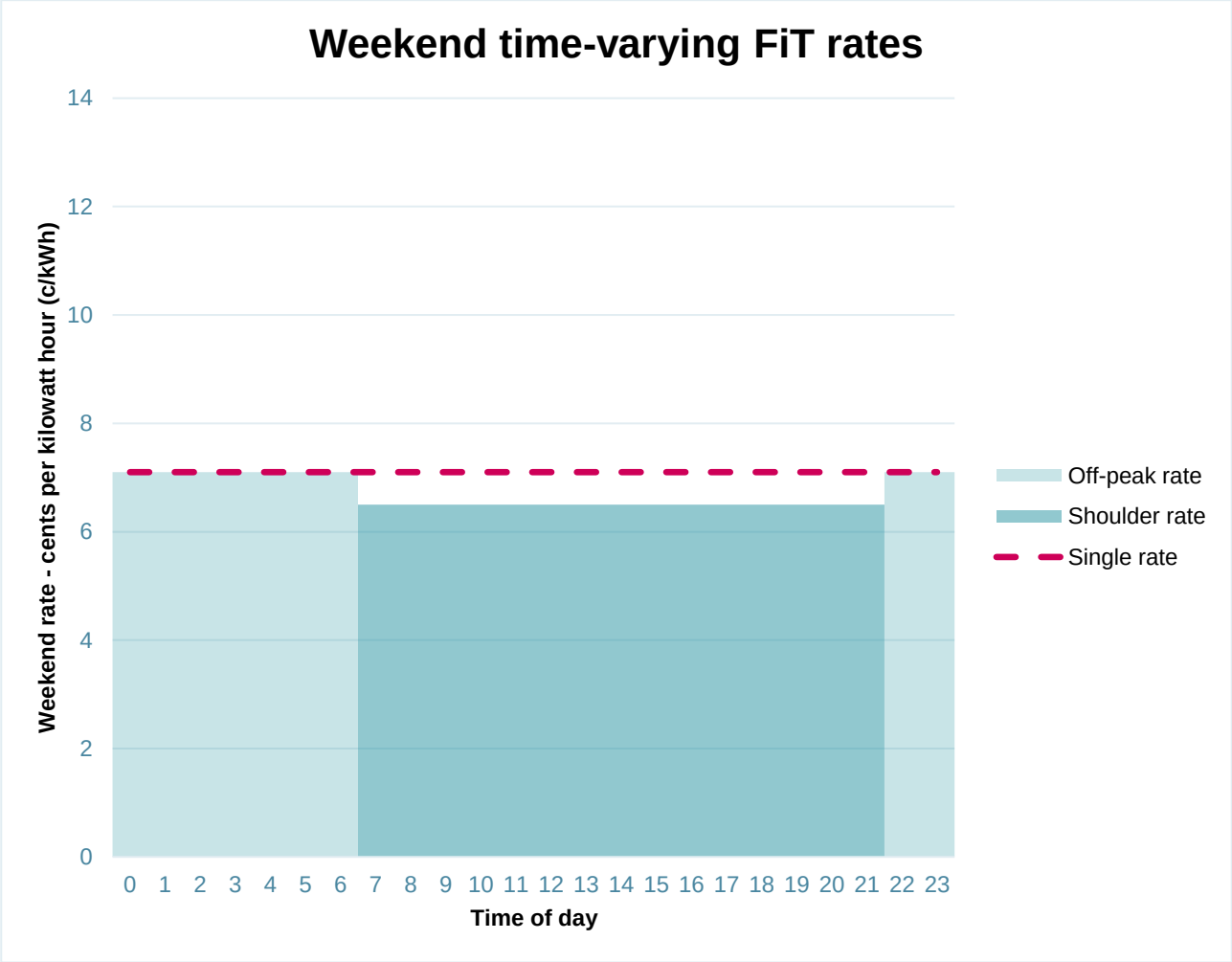
electricity demand. The wholesale spot price of electricity is determined through an auction, which is conducted every five minutes by the Australian Energy Market Operator. Currently, the process is repeated six times each half hour and we use the average generators are paid of the six marginal prices for the electricity they generate during that half hour.

On 28 November 2017, the Australian Energy Market Commission made a determination to change the settlement period from 30 minutes to five minutes, effective 1 October 2020. However, due to lack of historical data on five-minute settlements in the future's market approach to forecasting wholesale energy prices for 2021–22, we will continue to use the average price generators are paid every half hour. Therefore, this change does not impact this feed-in tariff decision.

Figure A.1 shows the single and time-varying minimum feed-in tariff rates proposed for 2021–22.

Figure A.1 – Minimum time-varying and single feed-in tariff rates, 2021–22





What is our role in setting the minimum feed-in tariff?

The Essential Services Commission is required under the Electricity Industry Act 2000 to determine the minimum rate or rates an electricity retailer must pay its customers, who are small renewable energy generators, for electricity they produce and export to the grid.[42]

When making the determination for the minimum feed-in tariff the commission must consider its objectives under the Essential Services Commission Act 2001 which are:

- in performing its functions and exercising its powers, the objective of the Commission is to promote the long-term interests of Victorians consumers; and further

[42] Electricity Industry Act 2000, s. 40FBB.

- have regard to the price, quality and reliability of electricity.[43]

We must also pursue our objectives under the Electricity Industry Act 2000. Those relevant to our role in setting the minimum feed-in tariff are:

- to promote the development of full retail competition
- to promote protections for customers, including in relation to assisting customers who are facing payment difficulties.[44]

In addition to matters we must consider in seeking to achieve our objectives under the Essential Services Commission Act 2001[45], the commission must also consider specific factors in determining the minimum feed-in tariff under the Electricity Industry Act 2000.[46] These factors are:

- the prices of electricity in the wholesale electricity market
- any distribution and transmission losses that are avoided, in Victoria, because of small renewable energy generation
- the avoided social cost of carbon and avoided human health costs which can be attributed to reduced air pollution caused by small renewable energy generators.

The Electricity Industry Act 2000 allows the Governor in Council to issue an order specifying a methodology or factors for determining avoided social cost of carbon and avoided human health costs.[47] An order made in 2017[48] sets out factors and methodologies for determining avoided social cost of carbon comprising the following:

- methodologies for determining the number of units of carbon dioxide equivalent (CO_2e) reduced per unit of electricity exported from a small renewable energy generator
- the monetary value for each unit of CO_2e that is reduced because of the exports of a small renewable energy generator.

The order did not specify factors or methodologies for determining the avoided human health costs caused by a reduction in air pollution.

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[43] Essential Services Commission Act 2001, s. 8.

[44] Electricity Industry Act 2000, s. 10.

[45] Essential Services Commission Act 2001, s. 8A.

[46] Electricity Industry Act 2000, s. 40FBB(3).

[47] Electricity Industry Act 2000, s. 40FBB(3B).

[48] Victorian Government 2017, Victoria Government Gazette No. Section 36, Tuesday 21 February 2017

Each year, the commission determines the minimum feed-in tariff rates for the forthcoming financial year. The feed-in tariff described in this document will apply from 1 July 2021 to 30 June 2022.[49]

Who is eligible to receive a minimum feed-in tariff?

The minimum feed-in tariff is available to residential households, businesses and community organisations. The property does not need to be your primary place of residence.[50]

Customers must have small renewable energy generation facilities with capacities of less than 100 kilowatts (kW) which produce electricity using renewable energy sources such as wind, solar, hydro or biomass and must be connected to a distribution system.[51] For example, a solar hot water system is not eligible under the minimum feed-in tariff as it does not generate electricity.[52]

Solar customers that install small-scale batteries as part of their current renewable energy system will continue to be eligible to receive feed-in tariff rates for the electricity generated and exported by their system to their retailers.[53]

What are the main benefits of solar?

Customers with solar panels benefit by:

- creating their own electricity, which is used in their property, saving them from purchasing energy from a retailer and therefore avoiding network and retailer costs; changing energy usage to during solar hours will also maximise savings
- receiving a feed-in tariff for exporting excess energy back into the grid
- installing a battery and saving excess energy generated during solar hours to maximise their savings.

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[49] Amendments to Energy Legislation Amendment (Feed-in Tariffs and Improving Safety and Markets) Act 2017, assent date 14 February 2017, requires the commission to set one or more rates (Section 40FBB(2) of the Electricity Industry Act 2000) by 28 February in the financial year preceding the financial year in which it is to apply; previously determinations applied to the following calendar year.

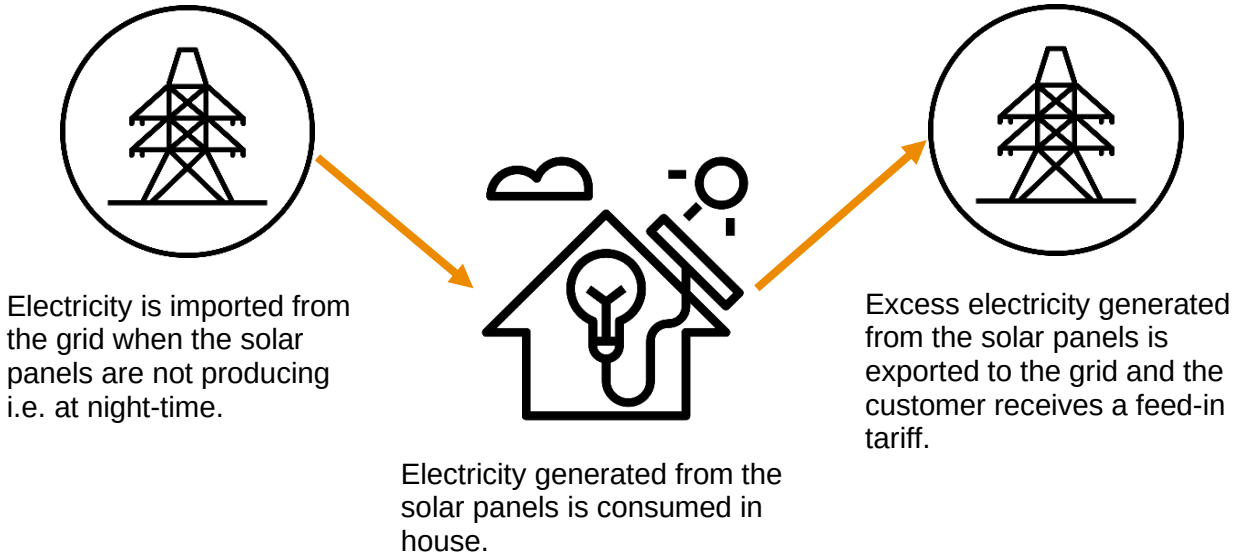
[50] Department of Environment, Land, Water and Planning, Minimum feed-in tariff frequently asked questions, accessed 14 October 2020, https://www.energy.vic.gov.au/renewable-energy/victorian-feed-in-tariff/frequently-asked-questions.

[51] Electricity Industry Act 2000, s. 40F.

[52] Department of Environment, Land, Water and Planning, Minimum feed-in tariff frequently asked questions, accessed 14 October 2020, https://www.energy.vic.gov.au/renewable-energy/victorian-feed-in-tariff/frequently-asked-questions.

[53] DELWP advice to the commission, email dated 30 October 2020. Also see, Department of Environment, Land, Water and Planning, Minimum feed-in tariff frequently asked questions, accessed 14 October 2020, https://www.energy.vic.gov.au/renewable-energy/victorian-feed-in-tariff/frequently-asked-questions.

Figure A.2 shows a solar customer consuming and producing electricity



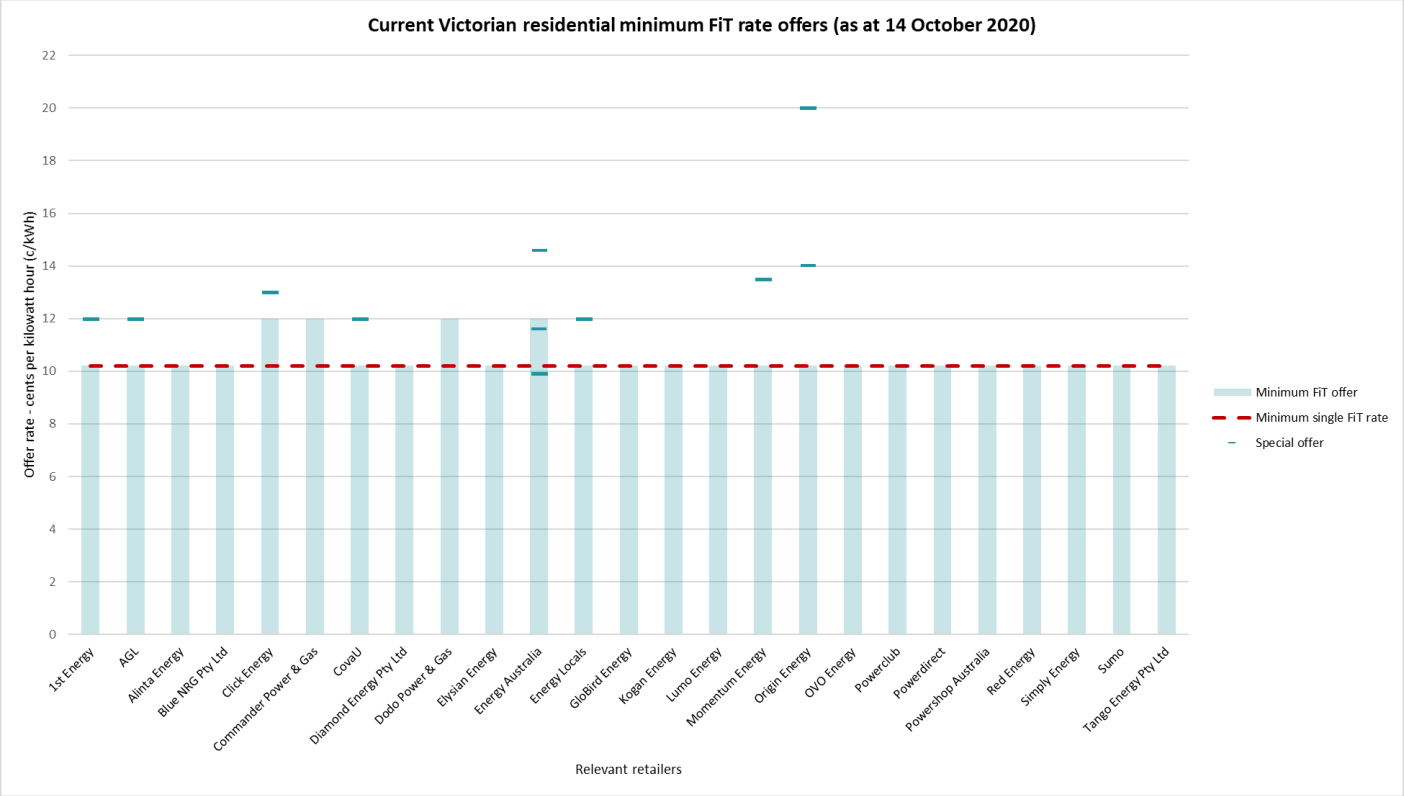
What offers are currently in the market?

All relevant Victorian energy retailers are required to provide at least the minimum feed-in tariff rate in all offers.[54] Retailers are free to offer a feed-in tariff rate above the minimum rate we set. We surveyed the single feed-in tariff rates available in the market in October 2020, see Figure A.3.[55]

[54] The relevant electricity retailer is a person that holds a licence to sell electricity and sells to more than 5000 customers in Victoria. See section 40F Definitions of the Electricity Industry Act 2000. Not all Australian states mandate a feed-in tariff.

[55] Publicly available information submitted to the government energy price comparator website Victorian Energy Compare as of 13 October 2020, https://compare.energy.vic.gov.au/.

Figure A.3 – Residential feed-in tariff offers available in October 2020



Source: Victorian Energy Compare, accessed 13 October 2020, https://compare.energy.vic.gov.au/.

Our search found four retailers offering single feed-in tariff rates higher than the current minimum 10.2 cents per kWh, Figure A.3 shows these retailers offer 12 cents per kWh – the minimum single feed-in tariff rate for 2019–20. Retailers could also offer higher feed-in tariff rate throughout the year.

We found some retailers offer higher feed-in tariff rates on certain plans or under special terms and conditions. For example, Origin Energy offer a 20 cents per kWh single feed-in tariff rate if new customers buy solar panels from them, or 14 cents per kWh if existing solar customers switch to Origin Energy.

Energy Australia is the only retailer to offer a time-varying feed-in tariff and a single feed-in tariff as part of their electricity plans for Victorian customers. Several other retailers offered contractual arrangements to battery owners which involved dynamic pricing of electricity exports. We will continue to monitor whether more retailers offer time-varying feed-in tariff in the future.

The premium feed-in tariff (60 cents per kWh, now closed to new customers), or any bonus that retailers may offer above this, is outside the scope of our role to set a minimum feed-in tariff rate.

We encourage customers to shop around because some retailers offer feed-in tariff rates higher than the minimum we set.

It is important to not just focus on the feed-in tariff rate when deciding on an electricity plan. Some plans which offer higher feed-in tariff rates may have less competitive prices for the electricity you consume from the grid and this may outweigh the benefit received from a higher feed-in tariff.

You should consider your energy consumption and generation as a whole when you choose an electricity plan: including both the rates you pay for the electricity you use and the electricity you export.

Appendix B – Comparison of the 2021–22 minimum feed-in tariff with historical rates

Table B.1 – Minimum single feed-in tariff rate from previous years (cents per kWh)

Feed-in tariff component	2015	2016	2017–18	2018–19	2019–20	2020–21	2021-22 (proposed)
Forecast solar-weighted average wholesale electricity price	5.7	4.6	8.1	6.8	8.9	7.3	4.3
Avoided market fees and ancillary service charges	0.05	0.1	0.1	0.1	0.1	0.1	0.1
Value of avoided transmission and distribution losses	0.4	0.3	0.6	0.5	0.5	0.3	0.2
Value of the avoided social cost of carbon	n/a	n/a	2.5	2.5	2.5	2.5	2.5
Minimum feed-in tariff rate	**6.2**	**5.0**	**11.3**	**9.9**	**12.0**	**10.2**	**7.1**

Table B.2 – Minimum time-varying feed-in tariff rates from previous years (cents per kWh)[56]

Period	2018–19	2019–20	2020–21	2021-22 (proposed)
Peak	29.0	14.6	12.5	11.7
Shoulder	10.3	11.6	9.8	6.5
Off peak	7.1	9.9	9.1	7.1

See chapter 3 of Frontier Economics' report for details on the comparison of wholesale electricity price forecasts applied to the 2020–21 minimum feed-in tariff and for this draft decision.[57]

[56] The time-varying feed-in tariff rates for 2018–19 and 2019–20 are time-weighted while the 2020-21 and 2021-22 rates are solar-weighted.

[57] Frontier Economics 2020, Wholesale Price Forecasts for Calculating Minimum Feed-In Tariff, October 2020, pp. 17-19, https://www.esc.vic.gov.au/minimum-feed-tariff-review-2021-22#tabs-container2.

Appendix C – Matters raised by stakeholders

Stakeholders can submit inquiries and complaints to the commission any time of the year, not just during price reviews. For 2020, we received a number of inquiries/complaints in relation to the minimum feed-in tariff. This chapter provides responses to the most common matters raised.

Why are the minimum feed-in tariff rates going down?

The level of minimum feed-in tariff rates each year is affected primarily by the changes in forecast wholesale electricity prices, which on average accounts for 63 per cent of the minimum feed-in tariff rate.[58]

The minimum feed-in tariff rates have gone down in 2020–21 and are also forecast to go down in 2021–22 due to forecast wholesale electricity prices during 'solar hours' being lower than in previous years.

Solar panels generally export electricity between certain hours of the day (termed solar hours), and we only use the forecast wholesale prices for electricity during these ‘solar hours’.

Why is the minimum feed-in tariff rate lower than retail electricity rates?

The feed-in tariff is a payment primarily for generating electricity while the retail price of electricity includes payment for a number of additional costs.

To provide electricity to customers, retailers must pay for, among other things, the costs of:

- transporting electricity (the poles and wires connecting customers to electricity generators)
- complying with environmental programs
- operating a retail business (for example, billing and revenue collection systems, information technology systems, call centre costs, human resources, finance, legal services, regulatory compliance costs, licence costs and marketing).

This means the minimum feed-in tariff will always be lower than the retail electricity tariff.

[58] Wholesale electricity prices accounted for almost 71 per cent of the 2020-21 feed-in tariff rates.

A lower feed-in tariff rate will reduce my return on investment and discourage solar uptake

Minimum feed-in tariff rates reflect the factors we are required to take into account under the Electricity Industry Act 2000 which includes:

- prices of electricity in the wholesale market
- any distribution and transmission losses avoided in Victoria by the supply of small renewable energy generation electricity
- the avoided social cost of carbon.

As we set the minimum feed-in tariff rates annually, we expect to see the rates fluctuate, particularly as wholesale electricity prices change in the energy futures market. Furthermore, it is not open to the commission to set the minimum feed-in tariff rates on the basis of other considerations, such as allowing solar customers to recover their investment or to promote uptake of rooftop solar generation.

As discussed in the summary, setting feed-in tariff rates higher than the true value of solar exports would not be consistent with our objectives of promoting protections for customers and their long term interests. Generally, it is the non-solar customers who do not directly benefit from feed-in tariff, that end up paying higher electricity rates to ensure a generous feed-in tariff for solar customers.

Can solar customers negotiate for better feed-in tariff rates?

Solar customers can negotiate with their retailers or other retailers for better feed-in tariff rates. The feed-in tariff rates we set are the minimum. Retailers can offer higher feed-in tariff rates if they prefer.

It is important not to focus solely on the feed-in tariff rates when deciding on an electricity plan. Some plans which offer higher feed-in tariff rates may have less competitive prices for the electricity that you consume from the grid, and this may more than offset any benefit received from a higher feed-in tariff rate.

You should consider your energy consumption and generation as a whole when you choose an electricity plan, including both the rates you will pay for the electricity you use and the electricity you export.

Eligibility for the feed-in tariff

We also received some queries about feed-in tariff eligibility relating to having two or more properties, switching from one retailer to another and increasing capacity of existing solar panels, among other questions.

The Department of Environment, Land, Water and Planning provides detailed information about feed-in tariff eligibility on its website: https://www.energy.vic.gov.au/renewable-energy/victorian-feed-in-tariff. It has also published responses to Frequently Asked Questions: https://www.energy.vic.gov.au/renewable-energy/victorian-feed-in-tariff/frequently-asked-questions.

Appendix D – Proposed amendments to the Energy Retail Code: Feed-in tariff notification

Proposed amendments to the Energy Retail Code: Feed in tariff notification

NOVEMBER 2020

1. Nature and commencement of this instrument

(1) This instrument amends the Energy Retail Code

(2) This instrument comes into operation on 1 June 2021

2. Table of amendments

Clause 3 Definitions

(1) After the definition of ***family violence*** insert the following definitions:

feed-in tariff agreement means an agreement between a retailer and a small customer, involving the purchase by the retailer of electricity from a *small renewable energy generation facility;*

feed-in tariff alert means a notice given under clause 70LA(1);

feed in tariff change means a change to the rate a *retailer* pays a *small customer* for electricity from a *small renewable energy generation facility*, including a rate determined by the *Commission* under section 40FBB(1) of the *Electricity Industry Act*;

(2) After the definition of ***small customer*** insert the following definition:

small renewable energy generation facility has the same meaning as in section 3 of the *Electricity Industry Act;*

Amendment to clause 70H

(2) Insert new subclause (1B)

(1B) Prior to entering a *feed-in tariff agreement*, a retailer must communicate to the *small customer* in a readily understandable manner information about any terms pursuant to which the credit payable to the *small customer* may vary.

New clause 70LA

(2) After clause 70L insert new clause 70LA

70LA Minimum standards – Notice of feed-in tariff change to be given

(1) If a *feed-in tariff change* is to take effect, the *retailer* must provide the *small customer* who is a party to the relevant *feed-in tariff agreement* with a *feed-in tariff alert* of the *feed-in tariff change.*

(2) The *feed-in tariff change alert* must be given to the *small customer*;

(a) in writing;

(b) using the *customer's* preferred method of communication (if nominated, for example by post or by email to a specified address);

(c) at least 5 *business days* before the *feed-in tariff change* will take effect.

(3) The *feed-in tariff alert* must state:

(a) the customer's metering identifier;

(b) that the *customer* may use a *price comparator* to compare offers that are generally available to classes of *small customers* in their geographical area;

(c) the name and web address of the *price comparator* including a hyperlink to the *price comparator* website on the notices provided electronically;

(d) the rate applying before and after the *feed-in tariff change*;

(e) the following words, 'the minimum feed-in tariff rate set by the Essential Services Commission is' immediately followed by the minimum rate set by the commission pursuant to s 40FBB(1) of the *Electricity Industry Act* as at the time the *feed-in tariff change* will take effect;

(f) the date on which the f*eed-in tariff change* will take effect.

(4) A *retailer* is not required to comply with this clause in respect of a *feed-in tariff change* where a *small customer* enters a *feed-in tariff agreement* less than 10 *business days* prior to a *feed-in tariff change* taking effect and the *retailer* notified the *small customer* of the *feed-in tariff change* prior to the *small customer* entering not the *feed-in tariff agreement*.

Amendment to clause 70M

(3) In sub-clause 70M(2)(b) remove the words "*benefit change* or *price change*" and substitute "*benefit change, price change* or *feed-in tariff change*".

Appendix E – Retailers' customer notification about feed-in tariff rate changes

Table E1 shows each retailer's terms and conditions that relate to notifying solar customers about changes to the feed-in tariff rates.

Table E1 – Comparison of retailers' customer notification approach on feed-in tariff changes

Retailer	Term and condition
AGL	We will give you prior notice of a variation under clause 6.6.1 by publishing a new AGL Feed-in Tariff in the Victoria Government Gazette and on our website at agl.com.au prior to the date the variation is to take effect. We will also give you written notice of a variation under clause 6.6.1 no later than in the first bill after the variation takes effect.[59]
Powerdirect	We will give you prior notice of a variation under clause 6.6.1 by publishing a new Powerdirect Feed-in Tariff in the Victoria Government Gazette and on our website at powerdirect.com.au prior to the date the variation is to take effect. We will also give you written notice of a variation under clause 6.6.1 no later than in the first bill after the variation takes effect.[60]
Powershop	We may vary the feed-in tariff credit rates (either for all customers or some customers) from time to time, including but not limited to circumstances where applicable regulations are varied. We will give you notice of any variation to the amount or structure of the feed-in tariff credit rate that applies to you under this contract. We will give you this notice within any timeframes mandated by applicable regulations, and in any event as soon as is reasonably practicable.[61]

[59] AGL, Electricity Generation Feed-in Terms, accessed 20 October 2020, https://www.agl.com.au/-/media/aglmedia/documents/get-connected/solar-info/feed-in-terms-vic.pdf?cidi=A10295.

[60] Powerdirect, Electricity Generation Feed-in Terms, accessed 20 October 2020, https://powerdirect.com.au/content/dam/digital/powerdirect/pdf/t-cs/pd-vic-solar-feed-tcs.pdf .

[61] Powershop, Solar Feed-in terms and conditions, accessed 20 October 2020, https://s3-ap-southeast-2.amazonaws.com/psau-wordpress/wp-content/uploads/2018/06/26033325/powershop-feed-in-terms-and-conditions-VIC-Jan1-2017.pdf.

Retailer	Term and condition
Dodo EnergyAustralia Globird Momentum Origin Energy People Energy Red Energy, Sumo, Tango	As soon as practicable, but no later than your next bill[62,63,64,65,66,67,68,69,70] Noting there are slight variations in wording of this term across these retailers.
Simply Energy	For feed-in tariffs payable under Law, we may vary the amount of your feed-in tariff, and let you know about the change, in accordance with Laws.[71]
Alinta	Market Solar Feed-in Tariff means the market solar feed-in credit tariff (expressed in cents/kWh) set by us from time to time for the Relevant State (which amount is available on our website and specified in our bill, with changes to that amount being notified to you in advance).[72]
BlueNRG	The minimum feed in tariff payable for energy exported in Victoria from your SREG facility is mandated by the Essential Services Commission of Victoria

[62] Dodo, Victorian Feed-in terms and conditions, accessed 20 October 2020, https://www.dodo.com/sites/dodo/files/2018-08/vic-feed-in-terms-08-14.pdf.

[63] Energy Australia, Your solar terms and conditions, accessed 20 October 2020, https://www.energyaustralia.com.au/sites/default/files/2020-01/130919_WP_SolarT%26C_VIC_FINAL_0.pdf.

[64] Globird, Feed-in electricity terms, accessed 20 October 2020, https://www.globirdenergy.com.au/wp-content/uploads/2016/08/Feed-in-Electricity-16.06.25-Terms-Ver2.pdf.

[65] Momentum Energy, Feed-in tariff terms, accessed 20 October 2020, https://www.momentumenergy.com.au/docs/default-source/terms-and-conditions/victorian-general-solar-fit-terms-and-conditions.pdf?sfvrsn=2a21f63e_4.

[66] Origin Energy, Feed-in tariffs Victoria, accessed 20 October 2020, https://www.originenergy.com.au/terms-and-conditions/vic-feed-in-tariff.html.

[67] People Energy, Terms and conditions, accessed 20 October 2020, https://www.peopleenergy.com.au/docs/General_Fit%20Terms%20&%20Conditions_Final%20Approved_Version%201_13102015.pdf.

[68] Red Energy, New Feed-in tariff terms and conditions Victoria, accessed 20 October 2020, https://www.redenergy.com.au/docs/Red-Energy-New-Feed-In-Terms-and-Conditions-Victoria.pdf.

[69] Sumo Energy, Solar feed-in agreement, accessed 20 October 2020, https://www.sumo.com.au/wp/wp-content/uploads/2017/11/171113-Sumo_Solar-Feed-In_CMYK-V02_Spreads.pdf.

[70] Tango, Solar retailer feed-in tariff (RFIT) scheme terms, accessed 20 October 2020, https://www.tangoenergy.com/sites/default/files/2018-06/Tango%20Solar%20RFIT%20Scheme%20Terms%20v2.0.pdf.

[71] Simply Energy, Agreement terms, accessed 20 October 2020, https://www.simplyenergy.com.au/sites/default/files/2020-08/contract-terms-2020.pdf.

[72] Alinta, Solar terms and conditions, accessed 20 October 2020, Alinta-Solar-TCs%20(8).PDF.

Retailer	Term and condition
	and is varied annually. We will notify you of any variations to the minimum feed in tariff.[73]
CovaU	Our 11.30 cents per kWh feed-in tariff is our standard retailer feed-in tariff which is subject to change at any time.[74]
Lumo Energy, 1st Energy,	Terms and conditions are unclear about notification of feed-in tariff changes.

[73] BlueNRG, Terms and conditions solar feed-in customers, accessed 20 October 2020, https://www.bluenrg.com.au/uploaded/Terms%20&%20Conditions%20and%20Compliance/Blue%20NRG%20Solar%20Feed%20In%20Tariff%20Terms%20and%20Conditions.pdf.

[74] CovaU, Smart saver solar, accessed 20 October 2020, https://www.covau.com.au/Portals/29/pdf/Smart_Saver_Solar_Jemena_Residential.pdf.

Appendix F – Feed-in tariff rates in other jurisdictions

Feed-in tariff are regulated in other Australian jurisdictions except for South Australia, the Australian Capital Territory and South East Queensland.

New South Wales does not regulate feed-in tariff rates but the Independent Pricing and Regulatory Tribunal, on request by the NSW government, sets a benchmark range annually as a guide.

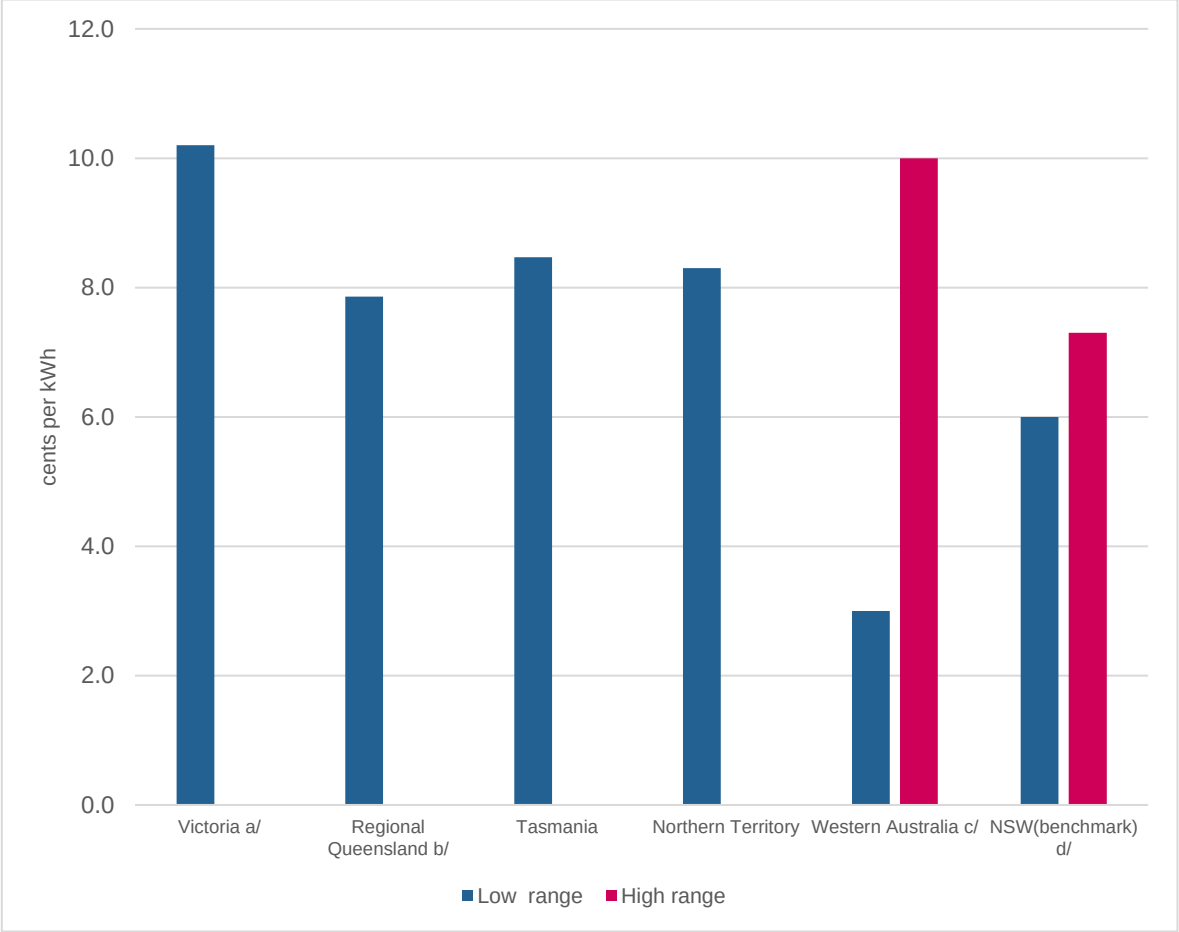
Figure F.1 compares the regulated feed-in tariff rates across Australia in 2020 while Figure F.2 shows a sample of market offers from eight electricity retailers.

Here are some of the key observations:

- Regulated feed-in tariff rates including the New South Wales benchmark (but excluding Western Australia's and Victoria's) ranged from 6–8.4 cents per kWh. Victoria's minimum feed-in tariff rates are slightly higher than other regulated feed-in tariff rates.
- Feed-in tariff rates from a sample of retailers across Australia ranged from 6–22 cents per kWh. Higher feed-in tariff rates are normally offered if solar panels are purchased from the retailers or if new solar customers change retailers.
- The 3 cents per kWh (all other hours) and 10 cents per kWh (3pm-9pm) under Western Australia's Distributed Energy Buyback Scheme has been set to encourage households to either use or store their solar energy generation in the middle of the day when it is plentiful and to install west facing panels that will generate electricity later in the day. It started to apply on 6 November 2020.
- Among eight retailers we looked into, Amber Electric has a different approach. It offers real time feed-in tariff rates in the Australian Capital Territory driven by 30-minute wholesale energy price.[75]

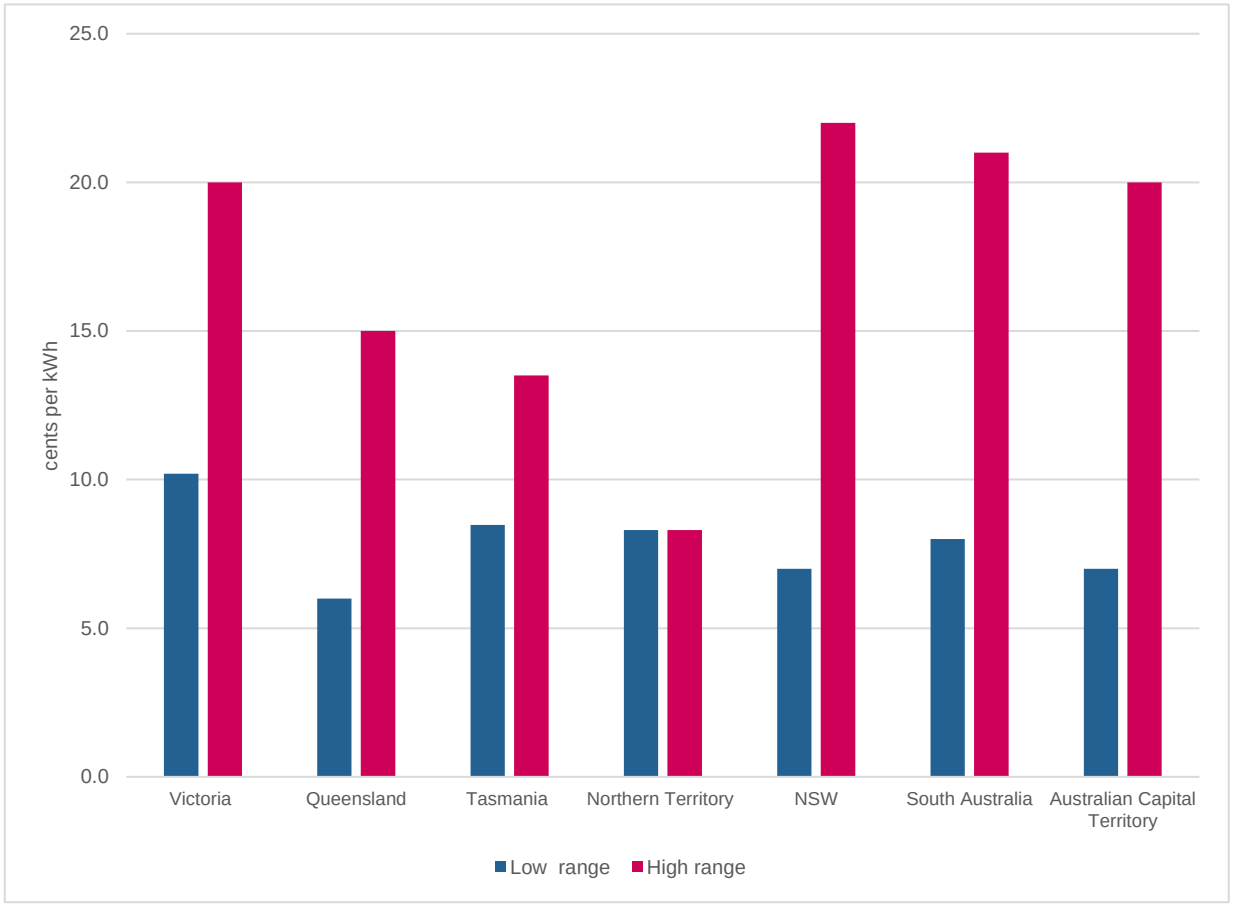
[75] Amber Electric, What is Amber's feed-in tariff (feed-in tariff), accessed 13 October 2020, https://help.amberelectric.com.au/hc/en-us/articles/360043443531-What-is-Amber-s-Feed-in-Tariff-feed-in tariff-.

Figure F.1– Regulated feed-in tariff rates in other jurisdictions (except NSW which set benchmarks only), 2020



[a/]Victoria also has time-varying feed-in tariff rates ranging from 9.1 to 12.5 cents per kWh. [b/]feed-in tariff rates are regulated in Regional Queensland only. [c/]Western Australia's new Distributed Energy Buyback Scheme has two rates: 10 cents per kWh (3pm-9pm) and 3 cents per kWh (all other times). [d/]IPART also sets benchmarks for different feed-in tariffs at different times of the day.

Figure F.2 – Examples of feed-in tariff rates offered by seven retailers, 2020[76]



[a] AGL[77], Origin Energy[78], Red Energy[79], Click Energy[80], 1st Energy[81], Aurora Energy[82], ActewAGL[83].

[76] AGL, Compare electricity and gas plans, accessed 13 October 2020, https://www.agl.com.au/get-connected/electricity-gas-plans/vic/comparison.

[77] AGL, Compare electricity and gas plans, accessed 13 October 2020, https://www.agl.com.au/get-connected/electricity-gas-plans/vic/comparison.

[78] Origin Energy, Feed-in tariff rates, accessed 13 October 2020, https://www.originenergy.com.au/solar/feed-in-tariff-rates.html#vic.

[79] Red Energy, Our current solar feed-in tariffs, accessed 13 October 2020, https://www.redenergy.com.au/saving-energy/victorian-feed-in-tariff.html.

[80] Click Energy, Find your perfect plan, accessed 13 October 2020, https://www.clickenergy.com.au/solar-power.

[81] 1st Energy, Compare our plans, accessed 13 October 2020, https://1stenergy.com.au/tas/. The regulated feed-in tariff of 8.45 cents per kWh plus a solar bonus of 5 cent/kWh.

[82] Aurora Energy, Solar products, accessed 13 October 2020, https://www.auroraenergy.com.au/residential/products/solar/solar-rates.

[83] ActewAGL, ACT solar advantage plan, accessed 13 October 2020, https://www.actewagl.com.au/support-and-advice/solar/solar-advantage-act. 12 cents per kWh for the first 8kW of solar exported to the grid and 7 cents per kWh thereafter.

Appendix G – Technical methodology

Our approach to determining the minimum feed-in tariff rates for 2021–22 is the same as the approach used to set the minimum feed-in tariff rates for 2020–21.

The methodology comprises the following components:

- the value of electricity sourced from small scale renewable generators, based on the avoided cost of purchasing an equal amount of electricity from the wholesale market, accounting for price changes throughout the day and seasonally, including:
  - both single rate and time-varying rate wholesale electricity price forecasts
  - avoided market fees and ancillary service charges
- avoided transmission and distribution losses
- avoided social cost of carbon and avoided human health costs.

Table G.1 shows how the minimum feed-in tariff is calculated from these components.

Table G.1 – Calculating the minimum feed-in tariff

Component	Calculation	Single rate	Off peak	Shoulder	Peak
A: Wholesale electricity prices	Solar export-weighted average price forecast (cents per kWh)	4.31	4.31	3.74	8.66
B: Avoided market fees and ancillary service charges	Budget National Electricity Market fee for 2020-21 used as a best estimate for 2021-22 + Average of the ancillary service charges recovered from customers between week 41 of 2019 and week 40 of 2020 (cents per kWh)	0.07	0.07	0.07	0.07
C: Transmission and distribution loss adjustment	Multiply overall losses for each distribution business by the share of total customer numbers and sum these. Take the inverse of these to find the loss adjustment.	0.0486	0.0486	0.0486	0.0486
D: Value of avoided transmission and distribution losses	Multiply (A + B) by C	0.21	0.21	0.19	0.42
E: Value of avoided social cost of carbon	Multiply the volume factor by the price factor – see page 52 for more information.	2.49	2.49	2.49	2.49

Component	Calculation	Single rate	Off peak	Shoulder	Peak
F: Value of avoided human health costs	Set at 0 cents per kWh since the Victorian Government's Order in Council does not specify a factor or method for determining avoided human health costs attributable to a reduction in air pollution.	0.00	0.00	0.00	0.00
***Total* (rounded to one decimal place)**	**A + B + D + E + F**	**7.1**	**7.1**	**6.5**	**11.7**

Forecasting wholesale electricity prices

We have used a futures market approach to estimate the wholesale electricity price in 2021–22. This approach best meets our legislative objectives.

We used a futures market approach in our 2020–21 and 2019–20 feed-in tariff decisions and our Victorian Default Offer decisions.[84] Benefits of using a futures market approach include:

- providing more transparency to stakeholders than a market modelling approach
- ensuring our decision matches the view of 'the market' as represented by contract prices.

Increased transparency over the inputs for analysis is consistent with our objectives to promote protections for customers[85] and promote the long term interests of Victorian consumers.[86] This is because increased transparency provides customers with greater opportunity to understand and provide meaningful feedback on our draft decisions.

Wholesale price forecasts for 2021–22

We engaged Frontier Economics to forecast wholesale electricity prices for 2021–22 using a futures market approach. The following section outlines the approach.

Wholesale price forecast for the single feed-in tariff rate

Forecasting the relevant wholesale price for the minimum single feed-in tariff rate involves five steps. The purpose of this is to estimate what retailers would pay for customers' solar exports if this electricity were sold into the wholesale spot market in 2021–22 in the same way as other generators' output.

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[84] Essential Services Commission, Victorian Default Offer Draft Decision, September 2020.

[85] Electricity Industry Act 2000, s. 10(c).

[86] Essential Services Commission Act 2001, s. 8.

1. **Calculating the price level for 2021–22.** Using the average price of 2021–22 quarterly baseload future swaps from the Australian Stock Exchange (after adjusting for an assumed contract premium of five per cent) weighted by traded volume across the most recent 12 months up to a particular date (for this draft decision this was 15 October 2020). The 12-month average price is reflective of retailers' approach to buying contracts.

   Table G.2 provides the value of these contracts over the 12 months up to and including 15 October 2020.[87] Frontier Economics will update these estimates for our February 2021 final decision, to reflect market expectations at that point in time. These updates are likely to result in a difference between the estimates contained in our draft and final decisions.

Table G.2 – Average baseload swap prices for 2021–22 (less 5 per cent premium)

Calendar quarter	Trade-weighted average price in 12 months to 15 October 2020 (cents per kWh)
Q3 2021	4.740
Q4 2021	4.641
Q1 2022	7.416
Q2 2022	4.117

Source: Base swap price data from ASX Energy and analysis from Frontier Economics

2. **Selecting the appropriate historical prices and export profile.** The commission received half-hourly actual export data for customers across each metropolitan and regional Victoria electricity distribution network for the period from 1 July 2019 to 30 June 2020. The most recent data is likely to be the best indicator of solar export profiles in 2021–22. Similarly, corresponding spot price data for the same time period is available from the Australian Energy Market Operator.
3. **Scaling historical prices to 2021–22 levels.** After averaging prices for each quarter for the relevant historical base year, they are compared to the quarterly futures prices in step 1 to determine a scaling factor for each quarter.

[87] Frontier Economics has advised the commission that a 40 day average is preferred over a 12 or 24 month average since base swaps further from maturity are less likely to be traded with accurate market information and are less representative of expected spot prices.

4. **Apply the scaling factor to the historical prices.** Each half-hourly price in the base year is scaled by the relevant factor calculated in step 3 to forecast the half-hourly prices expected in 2021–22.
5. **Calculate the single feed-in tariff rate.** The wholesale electricity component of the single feed-in tariff rate is calculated by averaging the half-hourly prices from step 4, weighted according to the time of solar exports from step 2. The formula for this is:

$$\text{Single feed-in tariff rate export weighted wholesale electricity price} = \frac{\sum_{t=1}^{17,568} (\text{expected price 2021-22}_t \times \text{solar exports}_t)}{\text{Total solar exports 2019-20}}$$

Where t= each half hour interval in the year.

Wholesale price forecast for the time-varying feed-in tariff rates

Steps 1 to 4 of forecasting the time-varying rate are the same for forecasting the single feed-in tariff rate. Like the single feed-in tariff rate approach, the commission has set the time-varying feed-in tariff rates using weighting based on solar export profiles. For step 5, the only difference is that the above weighting is done three times, once for each time block, using only the expected prices and solar exports from the relevant time block.

Estimate of market fees and ancillary service charges

When retailers purchase energy from the wholesale market, they must pay market fees and ancillary service charges to the Australian Energy Market Operator. The market operator charges these fees based on the amount of electricity that retailers purchase from the wholesale market. Retailers can avoid them to the extent they source electricity from small scale renewable generators. We have included these fees and charges (shown in Table G.3 below) in our calculation of avoided costs.

Table G.3 – Market fees and ancillary service charges

Item	Fee	
	$/MWh	cents per kWh
National Electricity Market fees	0.37	0.037
Ancillary service charges	0.37	0.037
Total	**0.74**	**0.074**

Source: AEMO, 2020-21 Budget and Fees report and ancillary services recovery summaries for 2019 and 2020

To be consistent with previous years, rounding the cents per kilowatt hour (cents per kWh) measure to the nearest 0.1 cent amount results in a value of market fees and ancillary services equal to 0.1 cents per kWh. This is included in the 2020–21 feed-in tariff.

Market fees

Up to 1 July 2020, the market operator recovered its National Transmission Planner (NTP) costs from retailers via a market fee. The market operator is no longer charging NTP fees from retailers from 1 July 2020 onwards.[88] Therefore, we have excluded NTP fees from our calculation of avoided wholesale electricity costs.

The NEM fee levied by the market operator is set in advance of each year through its annual budgeting process. However, the 2020–21 the market operator Budget and Fees paper does not provide an estimate of the fee for 2021–22. This is due to several factors that may impact fees beyond 2020–21 including the participant fee structure review currently underway, new regulatory developments, and unforeseen revenue and system impacts and new responsibilities resulting from the coronavirus pandemic. Therefore, we have used AEMO's budget 2020–21 market fee of 0.037 cents per kWh for retailers as a best estimate for 2021–22[89].

The above changes only have a minor impact on the feed-in tariff rates.

Ancillary services

The market operator recovers the cost of providing ancillary services from market participants (retailers) and publishes the recovery rate of ancillary service charges on a weekly basis. In determining a feed-in tariff rate that applies from 1 July 2021, we have assumed that the average cost of ancillary services in 2021–22 will be consistent with its average over the last 12 months (or 52 weeks) from October 2019 to October 2020.[90] This is the same approach we took in setting the VDO.[91]

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[88] COAG Energy Council 2020, National Electricity Amendment (Integrated System Planning) Rule 2020, March 2020, p. 3, http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/ESB%20Final%20Approved%20ESB%20Recommended%20National%20Electicity%20Amendment%20%28ISP%29%20Rule%202020.pdf.

[89] Australian Energy Market Operator 2020, 2020–21 AEMO Budget and Fees, June 2020, p. 26, accessed 16 October 2020, https://www.aemo.com.au/-/media/files/about_aemo/energy_market_budget_and_fees/2020/budget-and-fees---final.pdf.

[90] Australian Energy Market Operator 2020, Ancillary services payments and recovery, accessed 16 October 2020, https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/ancillary-services-data/ancillary-services-payments-and-recovery.

[91] Essential Services Commission 2020, Victorian Default Offer to apply from 1 January 2020: Final decision, November 2019. Essential Services Commission 2020, Victorian Default Offer 2021: Draft decision, September 2020.

Adding this charge to the National Electricity Market fee results in a value of 0.074 cents per kWh. It reflects the value of ancillary service charges and market fees a retailer avoids by purchasing electricity from a small scale renewable generator.

Estimate of the avoided transmission and distribution losses

Electricity supplied to the wholesale market is often produced by large central generators located some distance away from the point of consumption. Electricity is transported to households and businesses via a transmission and distribution network (also known as the grid). During this process, a small portion of electricity originally exported to the grid is lost as heat. This is referred to as network or line losses.

Small scale renewable generation reduces network losses because the generated electricity is typically consumed within a close radius. The extent of the associated cost saving varies depending on the location of the generation facility (among other factors such as the quality of the line and the amount of electricity flowing through it). We have incorporated this cost saving into the feed-in tariff rates by applying a 'loss factor' to the avoided cost of purchasing electricity in the wholesale market, including market fees and ancillary service charges.

Using AEMO's estimates of distribution and marginal loss factors for 2020–21, we have estimated a single customer share-weighted loss factor of 1.051 for Victoria. We have then applied the inverse of this loss factor to derive the value of avoided network losses used in the minimum feed-in tariff rates calculation. Table G.4 below sets out the inputs to the loss factor calculation which are publicly available on the market operator's website.

Consistent with previous reviews, we have taken the short sub-transmission 'E' distribution loss factors[92] and calculated the transmission loss factors by taking a simple average of the marginal loss factors across each distribution area.[93] These factors are then weighted by the number of low voltage residential and non-residential customers in each distribution zone to develop a Victoria wide loss factor.[94]

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[92] Australian Energy Market Operator 2020, Distribution loss factors for the 2020-21 Financial Year, accessed 16 October 2020, https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/2020-21/dlf-2020-2021.pdf.

[93] Australian Energy Market Operator 2020, Marginal loss factors for the 2020-21 Financial Year, accessed 16 October 2020, https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/2020-21/marginal-loss-factors-for-the-2020-21-financial-year.pdf.

[94] Australian Energy Regulator, Performance reporting, accessed 16 October 2020, https://www.aer.gov.au/networks-pipelines/performance-reporting.

Table G.4 – Inputs for calculating loss factors

Distribution business	Distribution loss factor	Average marginal loss factor	Total loss factor	Number of customers
CitiPower	1.0509	0.9978	1.0486	337,953
Powercor	1.0653	0.9848	1.0491	827,074
United Energy	1.0563	0.9963	1.0524	675,999
AusNet Services	1.0602	0.9992	1.0593	732,805
Jemena	1.0394	0.9983	1.0376	339,021
Customer share-weighted			1.051	
Inverse i.e. $1 - \frac{1}{1.051}$			4.86%	

Estimate of the avoided social cost of carbon

In February 2017, the Victorian Government issued an Order in Council specifying a methodology for determining the social cost of carbon and the factors we must consider when applying this methodology.[95]

It defines the avoided social cost of carbon for a relevant financial year as the 'cost per kilowatt-hour (kWH) of small renewable energy generation electricity purchased by a relevant licensee' (retailer), determined in accordance with the following methodology and factors:

$$Avoided\ social\ cost\ of\ carbon = Volume\ factor \times Price\ factor$$

Regarding the volume factor, we are required to use an emissions intensity coefficient factor of 1.27 kilograms (kg) of carbon dioxide equivalent (CO2e) per kWh of electricity exported by a small renewable energy generator. This means that 1.27 kg (or 0.00127 tonne) of CO2e is assumed to be avoided for each kWh of electricity exported by a small renewable energy generator.

With regard to the price factor, we have applied the method specified in the Order to determine the value of a tonne of CO2e. It results in a value of $19.63 per tonne of CO2e.

The resulting avoided social cost of carbon is 2.5 cents per kWh.

[95] Victorian Government 2017, Victoria Government Gazette No. S 36, Tuesday 21 February 2017, Order specifying a methodology and factors for the determination of the avoided social cost of carbon (Order in Council).

Human health costs

The Victorian Government's Order in Council does not specify a factor or method for determining avoided human health costs attributable to a reduction in air pollution. They are also not priced in the National Electricity Market. We reviewed the associated health benefits as part of our inquiry into the energy value of distributed generation in 2015.[96] However, due to a lack of sufficient evidence and data, we could not place a monetary value on them. We remain of the same view now. The Department of Environment, Land, Water and Planning has noted similar issues around data and raised concerns about reliably estimating these health costs in a Victorian context.[97] Currently, the avoided human health costs are set at 0 cents per kWh. If the Victorian Government publishes a methodology in the future, we will address it in our feed-in tariff calculation.

Structuring time-varying feed-in tariff

We have also set a time-varying feed-in tariff with peak, shoulder and off peak periods.[98] The time periods – or 'time blocks structure' – for the time-varying feed-in tariff are set out in Table G.5.

Table G.5 – Time block structure for time-varying feed-in tariff

Period	Weekday	Weekend
Off peak	10pm-7am	10pm-7am
Shoulder	7am-3pm, 9pm-10pm	7am-10pm
Peak	3pm-9pm	n/a

[96] Essential Services Commission 2016, The energy value of distributed generation, August 2017, pp. 62-63, https://www.esc.vic.gov.au/sites/default/files/documents/Distributed-Generation-Inquiry-Stage-1-Final-Report-Energy-Value-FINAL-20160916.pdf

[97] Department of Environment, Land, Water and Planning 2019, Estimating the health costs of air pollution in Victoria, pp. 3-5, https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0022/421717/Final_Health-costs-of-air-pollution-in-Victoria.pdf

[98] These time blocks align with the time blocks operating for flexible retail prices for ease of understanding by market participants. See: Essential Services Commission, 2016, The Energy Value of Distributed Generation: Distributed Generation Inquiry Stage 1 Final Report, August.

Appendix H – The legislation governing our role in setting the minimum feed-in tariff rates

Table H.1 – Relevant sections of the Essential Services Commission Act 2001

	Section
s. 8(1)	**Objective of the Commission** In performing its functions and exercising its powers, the objective of the Commission is to promote the long term interests of Victorian consumers.
s. 8(2)	Without derogating from subsection (1), in performing its functions and exercising its powers in relation to essential services, the Commission must in seeking to achieve the objective specified in subsection (1) have regard to the price, quality and reliability of essential services.
s. 8A(1)	**Matters which the Commission must have regard to** In seeking to achieve the objective specified in section 8, the Commission must have regard to the following matters to the extent that they are relevant in any particular case— (a) efficiency in the industry and incentives for long term investment; (b) the financial viability of the industry; (c) the degree of, and scope for, competition within the industry, including countervailing market power and information asymmetries; (d) the relevant health, safety, environmental and social legislation applying to the industry; (e) the benefits and costs of regulation (including externalities and the gains from competition and efficiency) for— (i) consumers and users of products or services (including low income and vulnerable consumers); (ii) regulated entities [electricity distributors and retailers]; (f) consistency in regulation between States and on a national basis; (g) any matters specified in the empowering instrument[in this case, the Electricity Industry Act (the Act)].
s. 8A(2)	Without derogating from section 8 or subsection (1), the Commission must also when performing its functions and exercising its powers in relation to a regulated industry do so in a manner that the Commission considers best achieves any objectives specified in the empowering instrument [the Act].

Table H.2 – Relevant sections of the Electricity Industry Act 2000

	Section
s. 10	**Objectives of the Commission** The objectives of the Commission under this Act are— (a) to the extent that it is efficient and practicable to do so, to promote a consistent regulatory approach between the electricity industry and the gas industry; and (b) to promote the development of full retail competition; and (c) to promote protections for customers, including in relation to assisting customers who are facing payment difficulties.
s. 40F(1)	**Definitions** In this Division— **biomass energy generation facility** means a generation facility that generates electricity by utilising energy from the combustion of— (a) biomass; or (b) biogas; **general renewable energy feed-in terms and conditions** has the meaning given by section 40FB; **hydro generation facility** means a generation facility that generates electricity by utilising the energy from moving water; **non-complying licensee** means— (a) a relevant licensee that has not complied with a condition set out in section 40FF(1) or 40G(1); or (b) a small retail licensee that has not complied with the condition set out in section 40FG(3); **qualifying customer**, of a relevant licensee or small retail licensee, means a person who— (a) purchases electricity from that relevant licensee or small retail licensee; and (b) engages in the generation of electricity— (i) at a property that the person occupies as their principal place of residence by means of one qualifying solar energy generating facility at the property; or (ii) at one or more properties— (A) that the person occupies, otherwise than as a place of residence, by means of one qualifying solar energy generating facility at each of those properties; and (B) at which the person's annual consumption rate of electricity is 100 megawatt hours or less; and

(c) has been exempted by Order under section 17 from the requirement to hold a licence in respect of the generation of electricity for supply and sale;

qualifying solar energy generating facility means a photovoltaic generation facility that—

(a) has an installed or name-plate generating capacity of 5 kilowatts or less; and

(b) is connected to a distribution system;

qualifying solar energy generation electricity means electricity that a qualifying customer generates and does not use;

relevant generator means—

(a) a generation company; or

(b) a person engaging in the generation of electricity for supply or sale that has been exempted by Order under section 17 from the requirement to hold a licence in respect of that activity;

relevant licensee means a person that—

(a) holds a licence to sell electricity; and

(b) sells electricity to more than 5000 customers;

small renewable energy generation electricity means non-pool electricity supplied by a relevant generator from a small renewable energy generation facility operated by that generator;

small renewable energy generation facility means a facility of the following kind, connected to a distribution system, that generates electricity and has an installed or name-plate generating capacity of less than 100 kilowatts—

(a) a wind energy generation facility;

(b) a solar energy generation facility;

(c) a hydro generation facility;

(d) a biomass energy generation facility;

(e) a facility or class of facility specified for the purposes of this definition under subsection (2)—

but does not include a qualifying solar energy generating facility or a TFiT scheme generating facility that is connected to a distribution system under the premium solar feed-in tariff scheme or TFiT scheme;

small retail licensee means a person that—

(a) holds a licence to sell electricity; and

(b) sells electricity to 5000 or less customers;

solar energy generation facility means a generation facility that generates electricity by converting solar energy into electricity;

feed-in tariff

wind energy generation facility means a generation facility that generates electricity by converting wind energy into electricity.

s. 40F(2)

The Governor in Council, by Order published in the Government Gazette, may, for the purposes of paragraph (e) of the definition of **small renewable energy generation facility**, specify a facility or class of facility that generates electricity in any way as a small renewable energy generation facility.

s. 40FB(1)

Meaning of general renewable energy feed-in terms and conditions

General renewable energy feed-in terms and conditions are the prices, terms and conditions comprising an offer under which a relevant licensee will purchase, from a relevant generator, small renewable energy generation electricity.

s. 40FB(2)

Without limiting subsection (1), on and after the commencement of section 4 of the **Energy Legislation Amendment (Feed-in Tariffs and Other Matters) Act 2013**, general renewable energy feed-in terms and conditions must, as a minimum, include terms and conditions under which—

(a) an amount, specified for a financial year under section 40FBA, is credited against the charges payable to the relevant licensee by a customer who is a relevant generator for electricity the licensee supplies to the customer (a ***general renewable energy credit***); and

(b) a general renewable energy credit that arises during a period of supply of electricity to that customer is included in the electricity bill of that customer that relates to that period of supply; and

(c) if, in a period of supply of electricity to the customer, a general renewable energy credit exceeds the amount owed by that customer for electricity supplied to that customer in that period of supply, the excess general renewable energy credit amount is—

(i) credited against the charges payable to the relevant licensee by that customer for electricity the licensee supplies to that customer in the next period of supply of electricity to that customer; and

(ii) included in that customer's electricity bill that relates to that period of supply of electricity; and

(d) any excess general renewable energy credit amount referred to in paragraph (c) is extinguished on the day the contract for the supply of electricity by the relevant licensee to the customer ends.

s. 40FBA

Rates for purchases of small renewable energy generation electricity

For the purposes of section 40FB(2)(a), in each financial year the amount to be credited against the charges payable to a relevant licensee by a customer who is a relevant generator is determined at—

(a) the rate or rates determined by the Commission under section 40FBB for that financial year; or

(b) if the Commission has not determined one or more rates under section 40FBB for that financial year—the rate or rates that applied immediately before the commencement of that financial year.

s. FBB(1)

Commission to determine one or more rates for purchases of small renewable energy generation electricity

The Commission may determine one or more rates for the purposes of section 40FBA(a).

s. FBB(2)

A rate determined under subsection (1) must be—

(a) determined not later than 28 February in the financial year preceding the financial year in which it is to apply; and

(b) published in the Government Gazette not later than that date.

s. FBB(3)

In determining a rate for the purposes of section 40FBA(a), the Commission must have regard to—

(a) prices of electricity in the wholesale electricity market; and

(b) any distribution and transmission losses avoided in Victoria by the supply of small renewable energy generation electricity; and

(c) the following avoided costs—

(i) the avoided social cost of carbon;

(ii) the avoided human health costs attributable to a reduction in air pollution.

s. FBB(3A)

If an Order under subsection (3B) is in effect, the avoided costs that the Commission must have regard to under subsection (3) are the avoided costs determined in accordance with the methodology or factor specified in the Order for the relevant avoided costs.

s. 40FBB(3B)

The Governor in Council, by Order published in the Government Gazette, may specify a methodology or factor for the determination of—

(a) the avoided social cost of carbon; or

(b) the avoided human health costs attributable to a reduction in air pollution.

s. 40FBB(4)

A determination of the Commission under this section is not a determination for the purposes of the **Essential Services Commission Act 2001**.

Appendix I – Glossary

Term	Definition
the Act	Electricity Industry Act 2000
cents per kWh	cents per kilowatt hour
commission	Essential Services Commission
DLF	Distribution loss factor
FiT	Feed-in tariff
IPART	Independent Pricing and Regulatory Tribunal in New South Wales
kW	Kilowatts
kWh	Kilowatt hour
the market operator	Australian Energy Market Operator
MLF	Marginal loss factor
MWh	Megawatt hour
MW	Megawatts
Relevant retailer	A person that holds a licence to sell electricity and sells to more than 5,000 customers[99].
Small renewable energy generator	A wind, solar, hydro, biomass energy facility (or other facility if specified by Order in Council) connected to a distribution system that generates electricity and has an installed or name-plate generating capacity of less than 100 kilowatts.

[99] Electricity Industry Act 2000, s. 40F.